S. HRG. 101-850

REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE TO ADDRESS THE CONSERVATION OF THE NORTHERN SPOTTED OWL

HEARING

BEFORE THE

SUBCOMMITTEE ON
PUBLIC LANDS, NATIONAL PARKS AND FORESTS

OF THE

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON THE

REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE TO ADDRESS THE CONSERVATION OF THE NORTHERN SPOTTED OWL

MAY 23, 1990

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE
33-407
WASHINGTON : 1990

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

S311-56

COMMITTEE ON ENERGY AND NATURAL RESOURCES

J. BENNETT JOHNSTON, Louisiana, *Chairman*

DALE BUMPERS, Arkansas
WENDELL H. FORD, Kentucky
BILL BRADLEY, New Jersey
JEFF BINGAMAN, New Mexico
TIMOTHY E. WIRTH, Colorado
KENT CONRAD, North Dakota
HOWELL T. HEFLIN, Alabama
JOHN D. ROCKEFELLER IV, West Virginia
DANIEL K. AKAKA, Hawaii

JAMES A. McCLURE, Idaho
MARK O. HATFIELD, Oregon
PETE V. DOMENICI, New Mexico
MALCOLM WALLOP, Wyoming
FRANK H. MURKOWSKI, Alaska
DON NICKLES, Oklahoma
CONRAD BURNS, Montana
JAKE GARN, Utah
MITCH McCONNELL, Kentucky

Daryl Owen, *Staff Director*
D. Michael Harvey, *Chief Counsel*
Frank M. Cushing, *Staff Director for the Minority*
Gary G. Ellsworth, *Chief Counsel for the Minority*

Subcommittee on Public Lands, National Parks and Forests

DALE BUMPERS, Arkansas, *Chairman*

BILL BRADLEY, New Jersey
JEFF BINGAMAN, New Mexico
TIMOTHY E. WIRTH, Colorado
KENT CONRAD, North Dakota
JOHN D. ROCKEFELLER IV, West Virginia

MALCOLM WALLOP, Wyoming
MARK O. HATFIELD, Oregon
CONRAD BURNS, Montana
JAKE GARN, Utah
PETE V. DOMENICI, New Mexico

J. Bennett Johnston and James A. McClure are Ex Officio Members of the Subcommittee
Thomas B. Williams, *Senior Professional Staff Member*
Elizabeth J. Norcross, *Professional Staff Member*
J. David Brooks, *Counsel*
Jim O'Toole, *Professional Staff Member (Minority)*

CONTENTS

Page

Adams, Hon. Brock, U.S. Senator from Washington 20
Bumpers, Hon. Dale, U.S. Senator from Arkansas 1
Hatfield, Hon. Mark O., U.S. Senator from Oregon 18
Houston, Dr. Douglas B., Research Biologist, Northwest Parks Research Group, Olympic National Park, National Park Service, Department of the Interior 63
Jamison, Cy, Director, Bureau of Land Management, Department of the Interior 38
McClure, Hon. James A., U.S. Senator from Idaho 12
Robertson, F. Dale, Chief, Forest Service, Department of Agriculture 49
Thomas, Dr. Jack Ward, Chief Research Wildlife Biologist, Forest Service, Department of Agriculture 29
Turner, John, Director, U.S. Fish and Wildlife Service, Department of the Interior 32
Wallop, Hon. Malcolm, U.S. Senator from Wyoming 2
Wirth, Hon. Timothy E., U.S. Senator from Colorado 11

APPENDIX

Responses to additional questions 119

REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE TO ADDRESS THE CONSERVATION OF THE NORTHERN SPOTTED OWL

WEDNESDAY, MAY 23, 1990

U.S. SENATE,
SUBCOMMITTEE ON PUBLIC LANDS,
NATIONAL PARKS AND FORESTS,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:07 p.m., in room SD-366, Dirksen Senate Office Building, Hon. Dale Bumpers, presiding.

OPENING STATEMENT OF HON. DALE BUMPERS, U.S. SENATOR FROM ARKANSAS

Senator BUMPERS. The subcommittee will come to order. The purpose of today's hearing is to receive testimony on the "Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl," better known as the "Thomas Report," which was named for the distinguished chairman of the Committee, Jack Ward Thomas.

The Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl was established under the authority of an agreement in August, 1988 between the Forest Service, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service. The Committee's charter was to develop a scientifically credible conservation strategy for the northern spotted owl.

As most of you know, the spotted owl has been a source of controversy since the early 1970s. Concern has focused on declines in the population and range of the owl, and depletion of its principal habitat, mature and old growth forests in the Pacific Northwest.

Over the last few years, issues related to the protection of the spotted owl have been the source of a considerable number of lawsuits, a special rider to the 1990 Appropriations Bill and a decision in April, 1989 by the Fish and Wildlife Service that the species warranted Federal protection as a "threatened species" under the Endangered Species Act. The Fish and Wildlife Service plans to announce its final decision on listing on June 23rd of this year.

The Thomas Report was released on April 1. In response to what the Interagency Committee viewed as a significant decline in owl habitat, the Thomas Report recommends a conservation strategy based on the protection of large blocks of Habitat Conservation

Areas, varying in size from 50 to 676,000 acres. On May 1 of this year, the BLM and the Forest Service released a follow-up report which analyzed the economic impacts of this report.

Not surprisingly, the Thomas Report and the potential economic impacts of its implementation have been the source of great controversy. Some have criticized the report for the size of the old growth areas set aside, its reliance on old growth timber for habitat, and what they perceive to be its devastating impacts on employment and local revenues. Others have questioned whether the recommendations go far enough in protecting the spotted owl.

I would wager that there are few in this room today that do not want to protect the spotted owl and the old growth forest upon which it depends. Clearly, the decline of a species is something that should be taken extremely seriously. In addition, the majestic old trees, many of which are 500 years old or older and hundreds of feet high, are certainly worthy of protection not only because they are beautiful to look at, but also because of the enormous diversity of species which inhabit their ecosystem.

The question, therefore, is not whether we protect the spotted owl, but how we protect it. What kind of habitat does the owl really need and how much? And how should the needs of the owl be balanced against the economic and human needs?

We are very pleased to have such a distinguished panel before us today to assist us in answering those questions. We appreciate your taking time out of your busy schedules to come before this Subcommittee on this matter of great concern, not only to the northwestern part of the United States, but to all of us.

The hearing record will remain open for two weeks in order to receive additional statements. I now call upon my distinguished ranking colleague, Senator Wallop.

STATEMENT OF HON. MALCOLM WALLOP, U.S. SENATOR FROM WYOMING

Senator WALLOP. Thank you, Mr. Chairman. Let me thank you for holding this hearing today. I want to begin by commenting on the conservation strategy for the northern spotted owl that is proposed by the Thomas Committee. I feel fortunate enough not to have spotted owls in my home state of Wyoming yet, the Committee's report brings an all too familiar view of the way in which advocacy groups manipulate, and in many cases create scientific data to support massive set-asides of Federal lands in the name of wildlife protection. Time and again the answer to all wildlife issues seems to be the creation of gigantic wildlife reserves, which just happen to suit the desires of those who wish to eliminate all commodity production and other productive uses on the public lands, and for whom the wildlife is merely an excuse to achieve these goals.

So far, I believe the Thomas Report to be one of the most outrageous examples of this abuse of science and public policy this Senator has yet to see. The proposal ought to be utterly unacceptable to the American people and it is particularly repulsive to me. I am extremely disappointed that this proposal has seen the light of day in this shape.

First, let me state that the Thomas Committee completely disregarded and violated the very charter which created the committee. The committee was expressly directed by the four Department of Agriculture and Interior agency heads to "suggest possible options" for spotted owl management by the Forest Service and the BLM. Instead, the committee refused to consider any options, but wrote a single plan and dictated that it must be adopted in its entirety.

Mr. Chairman, I have had it with Federal bureaucrats who ignore the law and the direction from their supervisors and try to impose their personal views on how public policy should be decided.

Secondly, the Thomas Committee report cannot be said to be based on science and does not constitute science. The committee admits in its report that it does not know what habitat the owls use, how much habitat exists, how many owls there are, how much habitat or how many owls are needed to protect the subspecies, how many young survive every year, how long owls live, how far owls can fly from area to area and so on. In fact, there is hardly anything about owls that the Thomas Committee admits to knowing, except that they do admit that it flies. Nonetheless, the committee is certain that it must put over 25,000 working men and women out of jobs in Washington, Oregon, and California, to preserve over 8 million acres of so called spotted owl habitat in those three states.

The decision-making process used by the Thomas Committee is embarrassingly unscientific. To decide how large each spotted owl reserve must be, the committee relied, by its admission, on sketchy reports of birds living on the islands off Great Britain, without even attempting to explain why birds living on islands in the middle of the ocean have relevance to birds living in the forests of the Pacific Northwest. At the same time, the committee refused to consider the information about other types of spotted owls living in the western United States because it was "not relevant."

I also find it incredible that the committee could try to justify as science the process of guesswork they call the "Delphi Approach," which is a fancy term I suspect, for a group of people sitting around the table guessing at the best solution to a problem which has no scientific answer. The critical decision that the spotted owl preserves must be no more than 12 miles apart was based entirely on the Delphi Approach, by the committee's own reported admission in the report. The approach is perhaps aptly named since the results would be just about the same had they consulted an oracle. Indeed, the whole process is closer to mythology than science.

For these reasons, it is understandable—and yet unacceptable—that there is no statistical analysis of the accuracy or reliability of the plan, and no sensitivity analysis to be able to determine whether the plan could be varied or modified and still achieve its objectives. The committee's failure to provide the agency heads with this basic information to aid their decision on whether or how to adopt the plan seems inexcusable and arrogant.

The committee also relied heavily on a computer model to justify its plan. Yet, everyone knows that the model is only as good as its assumptions, and none of the assumptions in the Thomas model were ever reviewed by any other scientist or verified and tested in any other way. I fail to see how the committee could rely on a totally untested model as the basis for its decision.

I am equally surprised that the Forest Service and the Interior Department would permit the Thomas Committee to develop a plan which turns the public lands of these three states into wildlife preserves in which protection of the spotted owl is the dominant purpose of every single acre of these lands, and every other use, including commodity production, recreation, hunting and even municipal water supply is secondary to protecting the owl. This is not only in violation of numerous Federal laws, such as the Multiple Use Sustained Yield Act, but it is truly not suitable public policy. And I hope that the Forest Service, and the BLM can find a way not to adopt the Thomas plan, consistent with the fulfillment of their statutory obligations under existing law.

And finally and most remarkable about the Thomas plan, Mr. Chairman, is that it is not practically implementable. Even though its authors claim that the entire plan must be adopted by four federal agencies, three states and countless private land owners to be effective, there is no possibility that these land owners and managers will in fact adopt the Thomas plan, one of the reasons why I object to the fact that they viewed no other alternatives as suitable possibilities for the management of this species. The plan asks the states of Washington, Oregon and California, to donate literally billions of dollars worth of state owned timber to the preservation of the spotted owl without offering any compensation. It used to be a policy and a custom in this nation that when the Federal Government needed land for public purpose, it acquired sufficient interest and compensated the owners.

Now, these states have trust obligations and commitments to the support of education and other public services which prohibit them from committing billions of dollars in resources to spotted owl protection. The Thomas plan will not be adopted by these states. And without the state owned lands, the critical requirement of "connectivity," said to be essential, is missing. I cannot imagine why the committee did not bother to conduct a minimal inquiry to determine if its plan was legally feasible or acceptable within those states before it issued its proposal.

Also, Mr. Chairman, I am chagrined at the way in which we are going about protecting threatened and endangered species, specifically with the fact that this is species-specific. We are going to manage a habitat for a single species and a single species only. What sort of a precedent does this set? Every time a report comes out recommending enlistment of a species as threatened or endangered, we will be managing the habitat for that species and the end result will be a patchwork of areas throughout the nation, ignoring the existence and habitats of other species. The report sets a bad precedent, not only because it virtually locks up large tracts of land from uses besides habitat for the northern spotted owl, but it has a much broader effect on similar situations throughout the country.

In my opinion, Mr. Chairman, the Thomas Committee acted irresponsibly by proposing a plan lacking in both scientific basis, that is unimplementable in substantial part, and clearly inconsistent with the Federal laws governing the management of those lands. This exercise has been a waste of the taxpayers' resources.

And one last point, Mr. Chairman, and that is that Senators who think that this affects only Oregon and Washington are sorely mistaken. Today I received a letter from one Charles Hunter, who owns Hunter Millworks in Lubbock, Texas and let me quote from him: "On April 6th, we were in the market for a truckload of fir plywood. We solicited quotations from our suppliers that morning and expected call-backs that afternoon. Were we surprised! The U.S. Fish and Wildlife Service had made public the Thomas Report before lunch. After lunch all fir plywood suppliers, and their mills, went off the market. There were no sellers at the wholesale level. The next week, after calm returned to the system, we were able to buy our materials."

Mr. Chairman, what would have happened if they had not found sellers among the major suppliers? Eventually, when these inventories had been depleted, they could have had their sawyers with nothing to saw, assemblers with no parts to assemble, and drivers with nothing to deliver.

I point out to my colleagues, Mr. Chairman, that this situation has a wider impact on employment levels and tax revenues than in the Pacific Northwest. I urge this Committee, my colleagues in the Senate and in Congress to find a way to protect the environment and the species within it, and also protect the people who reside there and their livelihoods. They are, Mr. Chairman, part of the environment. There is a human environment that attaches to all of this, and as the President said in Portland on Monday, "I do know the answer is we have got to be concerned about the human equation as well as the environmental equation." Mr. Chairman, I do not think this report does that.

[The prepared statement of Senator Wallop follows:]

Statement by Senator Wallop
Subcommittee on Public Lands, National Parks and Forests
Oversight Hearing on the Spotted Owl
May 23, 1990

Mr. Chairman, I would like to comment on the conservation strategy for the northern spotted owl as proposed by the Thomas Committee. While I am fortunate enough not to have spotted owls in my state of Wyoming yet, I am all too familiar with the way that advocacy groups manipulate and in many cases create "scientific data" to support massive set-asides of federal lands in the name of wildlife protection. Time and time again, the answer to all wildlife issues seems to be creation of gigantic wildlife reserves, which just happen to suit the desires of those who wish to eliminate all commodity production and other productive use of our public lands and for whom the wildlife is merely an excuse to achieve other goals.

So far, I believe that the Thomas report is one of the most outrageous examples of this abuse of science and public policy I have ever seen. This proposal is utterly unacceptable to the American people and it is particularly repulsive to me as a member of the United States Senate. I am extremely disappointed that this proposal ever saw the light of day.

First, I am appalled that the Thomas committee disregarded and violated the very charter which created the committee. The committee was expressly directed by the four Department of Agriculture and Interior agency heads to "suggest possible options" for spotted owl management by the Forest Service and the BLM. Instead, the committee refused to consider any options, but wrote a single plan and dictated that it must be adopted in its entirety. I have had it with federal bureaucrats who think that they can ignore the law and the direction from their superiors and try to impose their own personal views on how public policy should be decided.

Secondly, the Thomas committee report is not based on science and does not constitute science. It is something much closer to science fiction. The Thomas committee admits in its report that it does not know what habitat the owls use, how much habitat exists, how many owls there are, how much habitat or how many owls are needed to protect the subspecies, how many young survive every year, how long owls live, how far owls can fly from area to area, and much, much more. In fact, there is hardly anything about owls the Thomas committee thinks it does know, except that they think it flies. Nonetheless, the Thomas committee is certain that it must put over 25,000 to 31,000 working men and women out of jobs in Washington, Oregon, and

California, to preserve over eight million acres of so-called spotted owl habitat in those three states.

The decision-making process used by the Thomas committee is embarrassing to anyone calling himself a scientist. To decide how large each spotted owl reserve must be, the committee relied on sketchy reports of birds living on islands off Great Britain, without even attempting to explain why birds living on islands in the middle of the ocean have any relevance to birds living in the forests of the Pacific Northwest. At the same time, the committee refused to consider the information about other types of spotted owls living in the western United States because it was "not relevant."

I also find it incredible that the committee could try to justify as science the process of pure guesswork they call the "Delphi Approach," which is just a fancy term for a group of people sitting around a table guessing at the best solution to a problem which has no scientific answer. The critical decision that spotted owl preserves must be no more than 12 miles apart was based entirely on the Delphi Approach, by the committee's own admission. The approach is perhaps aptly named since the results would have been just as good or bad if they had consulted an oracle. Indeed the whole process is closer to Greek mythology than science. There is probably a place for oracles and mysticism in this society, but it is a lousy way to manage public lands.

For these reasons, it is understandable -- yet totally unacceptable -- that there is no statistical analysis of the accuracy or reliability of the plan, and no sensitivity analysis to be able to determine whether the plan could be varied or modified and still achieve its objectives. The committee's failure to provide the agency heads with this basic scientific information to aid their decision on whether or how to adopt the plan is inexcusable and arrogant, to say the least.

The committee also relied heavily on a computer model to justify its plan. Yet everyone knows that a model is only as good as its assumptions, and none of the assumptions in the Thomas model were ever reviewed by any other scientist or tested or verified in any way. I fail to see how the Committee could rely on a totally untested model as the basis for its decision. This report gives a whole new meaning to the computer phrase "garbage in, garbage out."

I am equally appalled that the Forest Service and the Interior Department would permit the Thomas committee to develop a plan which turns the public lands of these three states into wildlife preserves in which protection of the spotted owl is the dominant purpose of every acre of these lands, and every other use, including commodity production, recreation, hunting and even municipal water supply is secondary to protecting the owl. This is not only in violation of numerous federal laws, such as the Multiple Use Sustained Yield Act, but is truly insane public policy, I certainly hope the Forest Service and the BLM cannot adopt the Thomas plan, consistent with the fulfillment of the statutory obligations under existing law.

Finally, most remarkable about the Thomas plan is that it is not legally or practically implementable. Even though its authors claim that the entire plan must be adopted by four federal agencies, three states and countless private landowners to be effective, there is no possibility that all these landowners and managers will in fact adopt the Thomas plan. The plan asks the states of Washington, Oregon and California to donate literally billions of dollars worth of state-owned timber to preservation of the spotted owl, without offering any compensation. There used to be a policy in this nation that when the federal government needed land for a public purpose, however misguided, it acquired sufficient interest and compensated the owners. Apparently that policy is too inconvenient to be followed.

Yet these states have trust obligations and commitments to the support of education and other public services which prohibit them from committing billions of dollars in resources to spotted owl protection. The Thomas plan will never be adopted by the states, and without the state-owned lands, the critical requirement of "connectivity" said to be essential to the plan is missing. I cannot imagine why the committee did not bother to conduct a minimal legal inquiry to determine if its plan was legally feasible before it issued the proposal.

Also, I am deeply chagrined at the way in which we are going about protecting threatened and endangered species -- specifically with the fact that this is species-specific. We are going to manage a habitat for a single species and for a single species only. Do we realize what sort of precedent we are setting with this? Every time a report comes out recommending enlistment of a species as threatened or endangered, we will be managing a habitat for that species; and the end result will be a patchwork of such areas throughout the nation. This report sets a very bad precedent -- not only does it virtually lock up large tracts of land from uses besides habitat for the Northern Spotted Owl, but it will have a much broader effect on similar situations throughout the country. I shudder to think of how we in this Congress and administration might manage certain areas in the State of

Wyoming were the dinosaur not extinct. Someone somewhere is probably ready with a new Ouija-based report indicating that the dinosaurs will come back if we set aside the appropriate land base -- a cargo cult for extinct species.

I am simply appalled that the Thomas committee could act so irresponsibly by proposing a plan totally lacking in scientific basis, unimplementable in substantial parts and so clearly inconsistent with the federal laws governing the management of our public lands. This exercise has been a colossal waste of the taxpayer's resources, and I for one am fed up with the entire process when this sort of travesty is the end result.

One last point, Mr. Chairman, and that is that Senators who think that this only affects Oregon and Washington are sorely mistaken. Today I received a letter from Charles E. Hunter, who owns Hunter Millworks in Lubbock, Texas; let me quote:

> On April 6th, we were in the market for a truckload of fir plywood. We solicited quotations from our suppliers that morning and expected call-backs that afternoon. Were we surprised!
>
> The U.S. Fish and Wildlife Service had made public its Thomas Report before lunch. After lunch, all fir plywood suppliers, and their mills, were off the market. There were no sellers at the wholesale level.
>
> The next week, after calm returned to the system, we were able to buy our material.

But what if they had not found sellers among the major suppliers? Eventually, when their inventories had been depleted, they could have had sawyers with nothing to saw, assemblers with no parts to assemble, drivers with nothing to deliver, and some very unhappy contractors with no millwork for their carpenters to install. Without houses, we can probably create a whole generation of homeless so we can legislate a new bureaucracy to deal with them.

I point out to my colleagues that this situation has a much wider impact on employment levels and tax revenues than in the Pacific Northwest. I urge my colleagues to find a way to protect our environment and the species within it, and also to protect the people who reside there and their livelihoods. As President Bush said in Portland on Monday: "I do know the answer is we've got to be concerned about the human equation as well as the environmental equation."

Thank you, Mr. Chairman.

Senator BUMPERS. Thank you, Senator Wallop.
Senator Wirth.

STATEMENT OF HON. TIMOTHY E. WIRTH, U.S. SENATOR FROM COLORADO

Senator WIRTH. Thank you very much, Mr. Chairman. I am very glad that I came this afternoon. I came to hear Mr. Thomas, as I thought that he and his colleagues had done an extraordinarily good and comprehensive job, and I wanted to come and meet the man who, with a very well respected group of scientists, I think, did an extraordinarily good job with a very, very difficult problem.

I think it is important for us as we move into this, the afternoon, Mr. Chairman, to examine a number of assumptions that have been made about this report.

First of all, there is an assumption about 25,000 jobs being lost I think if you look at the report, it does not say that 25,000 jobs are being lost. It makes assumption between two various points. For example, from the drafts of the affected forests management plans to the finals, there is a very significant drop in the number of board feet being cut. That has nothing to do with the spotted owl. It is a 600 million or more board feet drop from the draft forest management plans to the final plans. That is one example of the kinds of changes that contribute to the specious 25,000 job number.

We also have to look at a variety of other elements that are occurring within the industry. Automation is moving in very rapidly. It is becoming highly mechanized and there are a lot of jobs that are disappearing as a result, and certainly, the spotted owl should not bear the burden of the job lost because of mechanization.

A final point that I would like to make, Mr. Chairman, is that the issue that we are talking about here goes far beyond the spotted owl. You know, what we are really talking about is not one species, not just the spotted owl. We are talking about a whole ecosystem, and that is what the owl represents. Do we want to protect this kind of an ecosystem or not? That is a public policy question that we have to make. Mr. Thomas and his colleagues did not address that, should we or should we not. They just laid out the information. It is up to us to make the decision. It seems to me that that is the question that we are looking at. Do we or do we not want to protect these very valuable and very fragile ecosystems?

In a way, the spotted owl is a little bit, I think, like the canary in the coal mine. You know, if the spotted owl goes, the whole ecosystem goes. And it is time to get out, and I think there is a lot of that going on on the face of this globe. We are seeing a lot of canaries—the dying off of coral, disappearance of the spotted owl, the disappearance of hundreds of thousands, if not millions of species. It is time that we wised up to the fact that with this enormous loss, we are losing probably an even greater economic potential than we have even begun to fathom.

So, I think we have a very interesting examination this afternoon, Mr. Chairman. I thank you for calling the hearing. I wish I could stay for the whole hearing. Unhappily, I have got to go listen to the Secretary of Energy talk about the Rocky Flats nuclear weapons plant. I am not sure which is going to be more interesting, the spotted owl or Rocky Flats. Thank you very much, Mr. Chairman.

Senator BUMPERS. Thank you very much.

Senator McClure.

STATEMENT OF HON. JAMES A. McCLURE, U.S. SENATOR FROM IDAHO

Senator MCCLURE. Thank you very much, Mr. Chairman. I have a rather lengthy statement. I will not give all of it. I will ask unanimous consent that it may appear in the record in full.

Senator BUMPERS. Without objection.

Senator MCCLURE. Mr. Chairman, I will, however, try to sketch some of my concern, at the outset recognizing that perhaps I have much to learn, and that is why we have hearings. That is why we have expert witnesses. And I will listen, but I would be unfair to the participants if I did not also indicate at the outset that apparently I have some bias. And that bias may become evident. But, I would pledge, at least, to listen to testimony. But in making this statement, I am saying to witnesses and others, to the extent that I have a bias, then I am going to be looking for evidence, and if indeed those who think my biases or preconceptions are wrong, should attempt to persuade me that I am wrong. And perhaps they can and perhaps they cannot.

On October 25th, I participated in the oversight hearing on the National Forest planning process, conducted by the Senate Committees on Energy and Natural Resources and Agriculture, Nutrition and Forestry.

At that time, I stated that when Congress passed the National Forest Management Act, we felt we had finally crafted a piece of legislation which would establish an orderly means of planning how to manage all resources in the National Forests. I am afraid that has not happened.

I went on to say that there are two ways to get to the top of an oak tree. Like the sought-after planning process, you can embrace the trunk, and reach up and climb limb by limb through the tree in an easy and orderly manner until you break through the canopy. The second way is to sit on an acorn and wait.

It seems clear that the decision has been made to sit on an acorn. As a result, the professional managers we had intended to depend upon have abdicated making some decisions, or have reversed their course. The simple threat of litigation or a whispered hint that with more time we can discover a threatened or endangered species is enough to bring the process to a complete halt.

Appeasement did not work very well for the British, and it is definitely not working for forest resources.

Mr. Chairman, I view this situation as an extremely critical issue in this Congress. There is an agency within this Administration that has quietly said they are ready to embrace the "Thomas Report" because it has been determined to be "credible," or if not credible, at least helpful to the special interests they view as their constituency. Well, perhaps it is easier to sit on an acorn, but before we get too comfortable, I believe it is necessary to point out that this report provides one solution only, maybe not the best solution nor the best of recommendations, as it is obvious to me that there are other alternatives. But this report discusses none of those.

This new strategy as recommended by the Report abandons the current network of the Spotted Owl Habitat Areas, otherwise know as SOHAs, on Forest Service and BLM lands which were reserved from logging and intended to provide enough habitat to support one to three pairs of owls.

By contrast, the new proposed Habitat Conservation Areas, HCAs, are blocks of contiguous forest habitat of a size to protect anywhere from 20 pairs to individual pairs. The acreage encompassed by individual HCAs varies from one of 50 acres in California to one of 676,000 acres in Washington. The total acreage within the network of HCAs is 8,444,650 acres—an area the size of Delaware, Maryland and Washington, D.C. combined. About 40 percent of these areas occur in lands already reserved in Wilderness Areas, National Parks and other set-asides. That means the HCAs have set aside for the spotted owl an additional 5,066,790 acres of forested habitat currently available for timber production—an area the size of the state of New Hampshire. Where sufficient old growth does not exist to define HCAs, younger stands are incorporated into the HCAs with the idea that these would grow into old growth over time. There will be virtually no timber harvesting allowed within HCAs of any age-class of forest. I suppose if we set aside the entire state of New Jersey, in one to two hundred years we could return it to the condition it was in before John Cabot left England. That is an interesting idea, but not very practical.

The report defines all forest lands outside of the HCAs as the "forest matrix." Within this forest matrix, reserved lands—parks, wildernesses and so forth—and lands not suited for timber production should have "no change . . . in the present direction of management. . . ."

However, on lands suited for timber production, timber harvest shall be permitted only when, within each quarter township, "50 percent of the forest landscape consists of forest stands with a mean d.b.h. of 11 inches, and a canopy closure of 40 percent." I have to ask: what scientific evidence produced this agenda?

I will not go through the balance of the statement in detail, but I do want to conclude with this remark. The Thomas Committee Report is really a sophisticated use of the "Delphi Technique" of convening experts to render conclusions in areas where the data are not adequate to base these conclusions on experimental results. The science is not clear. There are significant missing data it will take decades to collect before much of anything is clear. The interagency committee recommendation, like the SOHA plan before it, is a theory. Its implementation will be an experiment. The laboratory will be the Pacific Northwest. The experimental subjects will be both owls and people.

Mr. Chairman, thank you.

[The prepared statement of Senator McClure follows:]

Statement by Senator McClure
Subcommittee on Public Lands, National Parks and Forests
Oversight Hearing on the Spotted Owl
May 23, 1990

Mr. Chairman, on October 25, I participated in the oversight hearing on the National Forest planning process, conducted by the Senate Committees on Energy and Natural Resources and Agriculture, Nutrition and Forestry.

At that time, I stated that when Congress passed the National Forest Management Act, we felt we had finally crafted a piece of legislation which would establish an orderly means of planning how to manage all resources in the National Forests. I am afraid that has not happened.

I went on to say that there are two ways to get to the top of an oak tree. Like the sought-after planning process, you can embrace the trunk, and reach up and climb limb by limb through the tree in an easy and orderly manner until you break through the canopy. The second way is to sit on an acorn and wait.

It seems clear that the decision has been made to sit on an acorn. As a result, the professional managers we had intended to depend upon have abdicated making some decisions, or have reversed their course. The simple threat of litigation or a whispered hint that with more time we can discover a threatened or endangered species is enough to bring the process to a complete halt.

Appeasement didn't work very well for the British, and it's definitely not working for forest resources.

Mr. Chairman, I view this situation as an extremely critical issue in this Congress. There is an agency within this administration that has quietly said they are ready to embrace the "Thomas Report" because it has been determined to be "credible," or if not credible, at least helpful to the special interests they view as their constituency. Well, perhaps it's easier to sit on an acorn, but before we get too comfortable, I believe it is necessary to point out that this report provides one solution only -- maybe not the best solution nor the best of recommendations, as it is obvious to me that there are other alternatives. But this report discusses none of those.

This new strategy as recommended by the Report abandons the current network of the Spotted Owl Habitat Areas, otherwise known as SOHAs, on

Forest Service and BLM lands which were reserved from logging and intended to provide enough habitat to support one to three pairs of owls.

By contrast, the new proposed Habitat Conservation Areas (HCAs) are blocks of contiguous forest habitat of a size to protect anywhere from 20 pairs to individual pairs. The acreage encompassed by individual HCAs varies from one of 50 acres in California to one of 676,000 acres in Washington. The total acreage within the network of HCAs is 8,444,650 acres -- an area the size of Delaware, Maryland, and Washington, D.C. combined. About 40% of these areas occur in lands already reserved in Wilderness Areas, National Parks and other set-asides. That means the HCAs have set aside for the spotted owl an additional 5,066,790 acres of forested habitat currently available for timber production -- an area the size of New Hampshire. Where sufficient old growth does not exist to define HCAs, younger stands are incorporated into the HCAs with the idea that these would grow into old growth over time. There will be virtually no timber harvesting allowed within HCAs of any age-class of forest. I suppose if we set the entire State of New Jersey aside, in one to two hundred years we could return it to the condition it was before John Cabot left England. An interesting idea, but not very practical.

The report defines all forest lands outside of the designated HCAs as the "forest matrix." Within this forest matrix, reserved lands (Parks, Wilderness, etc.) and lands not suited for timber production should have "no change...in the present direction of management...".

However, on lands suited for timber production, timber harvest shall be permitted only when, within each quarter township, "50% of the forest landscape consists of forest stands with a mean d.b.h. of 11 inches, and a canopy closure of 40%." I have to ask: what scientific evidence produced this agenda?

Mr. Chairman, the April 4 House hearing was characterized by broad and unfocused questions related to the background of the report, which had been released only that day. Neither congressional staff nor members were provided with advance copies of the 458 page document any earlier than the morning before the mid-afternoon hearing. Therefore, the depth of inquiry was severely limited. Consequently, the report was given greater "scientific weight" than it may have deserved, based upon the availability of hard data and firm conclusions flowing from that data. In fact, much of the hearing discussion and subsequent media coverage concentrated on the notion that the "science" is clear, the "scientists have spoken," and the owl's situation is now known with "certainty."

However, a more careful look at the report demonstrates that, while it is "comprehensive" in evaluating all the data currently available about the owl, it does not provide any new data to advance our knowledge of the species. In fact, there are very significant data limitations in several areas.

I question the dispersal data, some of which was collected by using radio telemetry. Outfitting juvenile owls with radios is known to have significant impact on their behavior, including mortality.

Regarding population viability models, the forecasting models are based on little data, and a lot of theory and assumptions. Key data on reproduction dynamics and dispersal are still missing, and assumptions made by the committee have a significant impact on the outcomes of the models.

Theoretical population models show significant gains in long-term viability of the owl by increasing habitat area to accommodate from 1 to 10 pairs. However, only minor theoretical gain is predicted when one goes from 10 to 20 pairs. All of this is based on theory and the theory gets extremely weak at the 10 to 20 pair level. The committee's assumption regarding the size of HCAs is that if ten pairs per HCA is good, then double that must be better.

As far as the 50-40-11 rule goes, the 50% forested has no data existing to indicate the relative percentage of a forested area which has to be in favorable habitat for the area as a whole to serve as an effective foraging or connective area between HCAs. It may need to be 70% or may need to be only 30% -- we simply do not know.

There is absolutely no biological justification for a tree diameter minimum of 11" before an area can be considered as a favorable foraging or connective area. This is apparently tied to the fact that 11" represents the current lower limit of the sawlog classification in Forest Service timber inventory. Thus, this is apparently a matter of easy data retrieval, not spotted owl habitat needs.

No data exists which shows a negative impact on spotted owls due to road construction. The committee apparently assumed that any loss of habitat is the same, whether it is a narrow band or a square clearcut. This, very likely, is untrue.

The Thomas Committee Report is really a sophisticated use of the "Delphi

Technique" of convening experts to render conclusions in areas where the data are not adequate to base these conclusions on experimental results. The science is not clear. There are significant missing data it will take decades to collect before much of anything is clear. The interagency committee recommendation (like the SOHA plan before it) is a theory. Its implementation will be an experiment. The laboratory will be the Pacific Northwest. The experimental subjects will be both owls and people.

In this case, as with questions of carcinogenic risk analysis, science can give us better answers in a relative sense -- but not certainty. Here particularly, we are measuring risks to both owl populations and human lives.

In short, I believe the Report is not credible. We have no idea what sort of peer review all of the assembled information received before it was incorporated into this report. In addition, the final product only received very limited peer review, certainly not sufficient to proclaim the report as credible.

Most importantly, this report addresses one species and its habitat. What will happen when we locate a species that clearly dislikes old growth but prefers second growth and is dependent on it for its survival? If current trends continue, I predict that our National Forest will be completely operated and managed by unelected court officials and questionable "reports."

Thank you, Mr. Chairman.

Senator **Bumpers**. Thank you, Senator McClure.
Senator Hatfield.

STATEMENT OF HON. MARK O. HATFIELD, U.S. SENATOR FROM OREGON

Senator **Hatfield**. Mr. Chairman, I too wish to express my appreciation for your calling this meeting today, and I would like to correct for the record, if I understood my colleague from Colorado correctly, in his making the assessment of the economic impact of the spotted owl and of the changing forest plans. Those economic findings were made after, and I emphasize after, the spotted owl had been overlaid on the forest plans that are being developed. He may not have stated it as I understand it, but I wanted to correct the record if he did so.

Mr. Chairman, I want to say to Dr. Thomas and to the members of his committee that I appreciate the extraordinary effort to produce this report. What I mentioned the day the Thomas Report was released, I wish to reiterate today. Dr. Thomas and his team are an exceedingly credible, talented group of scientists. All of us are indebted to them for their contribution to the body of knowledge about the issue before us today.

In the end however, it is the business of the Congress to make laws based upon sound policy, and in making such laws, we must remind ourselves that complexity certainly is an implicit part of the multiple use approach we take to all public land management.

The status of the northern spotted owl in the Pacific Northwest has added a new dimension to our ongoing discussions of future forest management in Oregon, Washington and Northern California, and in that context, this hearing on the so-called Thomas Report is particularly timely.

Mr. Chairman, I hope we can use this time to learn more about the assumptions which were used to develop the interagency committee plan, and I also hope we can discuss in depth the economic, the social and the biological effects of implementing that plan.

Finally, I think we are all very interested to learn how that information will be used by the various agencies, both before and after a potential listing of the owl as threatened or in danger. Perhaps, it is worth noting at the outset that no outside witnesses were invited to testify today. Now, I want to commend the Chairman, because this omission was not by accident or oversight. Had we asked individuals from the timber industry or the environmental community to testify, we would have set the stage for yet another shouting match.

Certainly, there are those who would welcome such an opportunity. Everyday I hear from people who want to shoot the owl, and I also hear from people who want to elevate the owl over basic human needs. Clearly, these either/or positions are unacceptable. Instead, we must find a defensible, middle ground produced through a rational discussion of the facts, all the facts—scientific, economic, social—understanding the facts and that is the task ahead of us.

While the public focus now is on the recommendations contained in the Thomas Report, it is critically important that we concurrently gather data on the economic and social implications and the effects of any policy which would fundamentally alter forest management policy.

As my colleagues know, we are involved in more than an esoteric discussion of biology. We are involved in a discussion about real people, human beings, and real communities, of which Oregon has 70 dependent upon a one or two mill economy, and the future of those communities are at stake.

I come into the hearing convinced that we must achieve a balance that will protect our environment and our citizens. And I come to this hearing increasingly troubled that calling for balance has become synonymous in the minds of many observers with skirting the issues or avoiding them entirely. My point was underscored by a headline over a story about President Bush's visit to Oregon yesterday in yesterday's New York Times. The headline: "Bush Skirts Two Conservation Issues, President Offers His Familiar Find-A-Balance Theme." I have not learned very much about forestry from the New York Times with any of the articles that I have read.

But simply, Mr. Chairman, I reject the notion that seeking balance simply means abdicating responsibility. Of course, it would be simple for us to choose sides and prepare for battle. Any fool could join up with a side if he is looking only for single issues or single dimensions. Indeed, the easiest thing in the world to do is to choose sides in a controversy. Anyone could advocate a single position without regard to any other point of view or any other interest or any other impact.

I had people tell me over the last few years when I was saying, this is not an issue between the timber barons on one hand and the environmentalists on the other hand. This is an educational issue in my state where up to 40 percent of some of our local school districts depend upon timber receipts. But we have let these single-issue people prevail in reducing this to a ludicrous level of an either/or situation.

Leadership in a pluralistic society rejects this simplistic notion and requires us to acknowledge, understand and show tolerance for the various sides of all the issues and of all the interests. Seeking balance, therefore, necessarily means confronting the issues, all of the issues, head on, not trying to ignore or avoid them. Seeking balance does not mean skirting or avoiding the issues; it means delving into them and really biting the bullet. We must place the development of results ahead of the spewing of rhetoric, well-informed compromise over a hard-headed confrontation. We must not choose the easy way; we must choose the right way. And that is where I plan to put my efforts.

I plan to work with my colleagues on this committee and others to find a responsible balance, a balance that will provide stability for communities in my state and for other Pacific Northwest, which depend on public timber, and to provide for continued viability of the northern spotted owl, and our old-growth forest. This is not to be easy, but the future of the entire region depends upon our commitment and I welcome the challenge.

Thank you, Mr. Chairman.

Senator **Bumpers**. Thank you very much, Senator Hatfield. Senator Adams requested and I granted permission for him to sit in on the hearing. He is not a member of the Committee, but obviously has a deep and abiding interest in the issue. There is precedent for this and, Senator Adams, we are honored to have you join us. Did you have an opening statement you would like to make?

STATEMENT OF HON. BROCK ADAMS, U.S. SENATOR FROM WASHINGTON

Senator **Adams**. Thank you, Mr. Chairman. I would like to thank the chairman and the members of this committee for allowing me the opportunity to join with you.

I am very concerned about the spotted owl, old-growth timber supply issue, and appreciate the opportunity to join this panel and hearing the testimony of agency experts. I do not want to use up the Committee's valuable time by making a lengthy statement. However, I would like to take a minute to highlight two concerns.

First, the focus of this hearing is on the Jack Ward Thomas spotted owl report. I would like to state that the broader issue of concern to me and to the people of my state is a general ecological health of our forests. A lot of our attention and financial resources have been directed toward the protection of the spotted owl.

I appreciate the work of the agencies and Dr. Thomas in addressing this problem. However, our work is not just involved with the protection of the owl. We must ensure that our forest is in good health to support the future generations of wildlife, plants and fish, as well as human beings. Our survival, as well as the survival of other species on this earth depends upon maintaining this crucial balance.

My second concern is with the communities which ultimately must absorb the impact of these decisions. I do not want them to become pawns in a chess game. Decisions must be made, and we must move forward.

Senator Hatfield and I have had some experience with this before, and we know that something will happen, and I want to state that again. Something will happen.

If it appears that there are going to be significant drops in the timber harvest, then we as a society must cope with the impact on our communities by assisting them through a transition period.

I would like to conclude, Mr. Chairman, with a request to the agency leaders. Please give us your recommendations. You are the experts. We in Congress are not foresters. We are not wildlife biologists. We need your advice about the ways to protect our natural resources without devastating our local economies.

Thank you, Mr. Chairman, and I look forward to hearing the testimony of the agency representatives, and I appreciate the members of the committee for their indulgence in allowing me to sit with them.

Senator **Hatfield**. Mr. Chairman, Senator Gorton, Slade Gorton of Washington State, who is not a member of this Committee, appeared a little bit earlier and asked me to identify his interest in this hearing, and to also indicate for the record that he and I have been in very close communication on the proceedings leading up to this hearing today.

Thank you, Mr. Chairman.

Senator **Bumpers**. Thank you, Senator Hatfield.

Senator **McClure**. Mr. Chairman, before the witnesses are heard, I would direct their attention to a section of the statute, and if they have covered it by their remarks, fine. If they have not, I would ask them to at least consider it and perhaps supplement their remarks or make reference to them in their comments and testimony today.

And I want to clearly separate the issue of the listing of a species from the actions that follow the listing, because I think that is a critical step in this process, and one which we will have to be involved in as will every Federal agency that is involved. And I refer to Title XVI of the Federal Code, Section 1533 1(b)2. And it says, "The Secretary shall designate critical habitat and make revisions thereto under Subsection (a)3 of this section, on the basis of the best scientific data available, and after taking into consideration the economic impact and any other relevant impact, specifying any particular area as critical habitat."

Now, there is more to that section that qualifies that language. I do not mean to leave that as the only statement of law, but I think that is a critical question as we go beyond the Thomas Report into the actions taken by the administrative agencies in the designation of critical habitat. I thank the Chair.

Senator **Bumpers**. Thank you, Senator McClure.

At this point, I, without objection, would like to put the executive summary of the Interagency Scientific Committee Report and the economic impact statement into the record, and then just state this for the benefit of all the members of the committee.

We are here essentially to hear testimony on this salient part of the report, which says, "We have concluded that the owl is imperiled over significant portions of its range because of continuing losses of habitat from logging and natural disturbances. Current management strategies are inadequate to ensure its viability. Moreover, in some portion of the owl's range, few options for managing habitat are left, and options are inexorably declining across its range. Delay in implementing a conservation strategy cannot be justified on the basis of inadequate knowledge."

Now, the report goes on to say this, "Several cultural prescriptions might be developed that would yield significant volumes of wood products while maintaining suitable habitat for spotted owls, but we find no clear evidence that such prescriptions currently exist. Until they do, the prudent approach to ensuring the viability of the owl is to protect an adequate distribution and amount of existing habitat."

[The material referred to follows:]

Summary

The Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl ("the Committee") was established under the authority of an interagency agreement of August 1988 between the USDI National Park Service, USDA Forest Service, USDI Bureau of Land Management, and USDI Fish and Wildlife Service. The Committee's charter was signed by the agency heads and subsequently incorporated into Section 318 of Public Law 101-121 in October 1989. The Committee was asked to develop a scientifically credible conservation strategy for the northern spotted owl.

Since that time, the Committee has reviewed the literature on the northern spotted owl, heard presentations from most of the scientists doing research on spotted owls and from numerous interest groups, and conducted field trips in Washington, Oregon, and northern California to examine the owl's habitat. We have also interviewed dozens of biologists and land managers.

Much of the attention directed toward this bird stems from a growing debate over managing old-growth forests on Federal lands and concern about protecting biodiversity. We understand the significance of these larger issues, but we have kept to our mandate to develop a conservation strategy specifically for the northern spotted owl.

We have concluded that the owl is imperiled over significant portions of its range because of continuing losses of habitat from logging and natural disturbances. Current management strategies are inadequate to ensure its viability. Moreover, in some portions of the owl's range, few options for managing habitat are left, and options are inexorably declining across its range. Delay in implementing a conservation strategy cannot be justified on the basis of inadequate knowledge.

Owl Habitat and Population Trends

The Committee reviewed all available studies dealing with spotted owl habitat, the relative abundance of owls related to stand age, and the relative abundance of owls related to the proportion of the general landscape in various successional stages.

Habitats selected by northern spotted owls typically exhibit moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large cavities, broken tops, and other indications of decadence; numerous large snags; heavy accumulations of logs and other woody debris on the forest floor; and considerable open space within and beneath the canopy. These attributes are usually found in old growth, but they are sometimes found in younger forests, especially those that contain remnant large trees or patches of large trees from earlier stands. In younger forests that support breeding owls, the nest and major roost sites are usually found where large trees from the earlier, older stands remain.

We evaluated the coastal redwood forests of northwestern California, where numerous owls live in stands that are mostly 50 to 80 years old. We believe their presence is attributable to the region's unique set of conditions, including a rapidly growing tree species that sprouts from stumps; intrusion of other conifer and hardwood species into the understory; relatively high rainfall; a long growing season; and abundant prey. Under these conditions, the structural attributes that are usually associated with the presence of owls develop at an accelerated rate. We caution strongly against extrapolating these results to other parts of the owl's range.

Silvicultural prescriptions might be developed that would yield significant volumes of wood products while maintaining suitable habitat for spotted owls, but we find no clear evidence that such prescriptions currently exist. Until they do, the prudent approach to ensuring the viability of the owl is to protect an adequate distribution and amount of existing habitat. Nonetheless, examining younger forests where spotted owls reproduce successfully should yield valuable insights into silvicultural techniques that could produce both wood products and owls.

For at least the past century, loss of spotted owl habitat has exceeded recruitment. By some estimates (perhaps conservative), spotted owl habitat has been reduced by about 60% since 1800. The current total population of the owl is likely to be far less than once existed. The loss of habitat has not been distributed evenly across the range of the subspecies.

Owl habitat is also being fragmented, causing isolation of some populations of owls. Fragmentation in the home ranges of individual birds may expose owls to greater risks of predation and competition, and to further losses of habitat when trees blow down in high winds and stands suffer other impacts associated with forest edges.

Considerable attention has focused on how many northern spotted owls exist. Current data do not permit a statistically reliable population estimate. Some 2000 pairs have been located during the past 5 years or reconfirmed from pre-1985 surveys, but this number represents an unknown fraction of the total population. More significantly, demographic studies from the Klamath Mountains in California and the Coast Range in Oregon indicate that populations in these study areas are declining.

The Conservation Strategy

We propose a two-part conservation strategy. In the first stage, steps are taken to ensure that adequate amounts and distribution of habitat are protected to ensure the owl's long-term survival. The second stage calls for research and monitoring to test the adequacy of the strategy and to seek ways to produce and sustain suitable owl habitat in managed forests. Insights gained in this second stage can be used to alter or replace habitat conservation plans prescribed in the first stage, but only if the modified strategy can be clearly demonstrated to provide adequately for the long-term viability of the owl.

Our strategy largely abandons the current and, we believe, flawed system of one- to three-pair spotted owl habitat areas (SOHAs), in favor of protecting larger blocks of habitat—which we term Habitat Conservation Areas, or HCAs.

Large blocks of habitat capable of supporting multiple pairs of owls and spaced closely enough to facilitate dispersal between blocks are far more likely to ensure a viable population than the current SOHA system. Owls in an HCA containing multiple pairs will benefit from internal dispersal of juvenile owls as well as recruitment of dispersing birds from other HCAs. Owls in HCAs containing multiple pairs are less vulnerable to random fluctuations in birth and death rates. Large HCAs reduce the impacts of habitat fragmentation and edges, and they are more resistant than SOHAs to small-scale natural disturbances.

The Committee has delineated on maps a network of HCAs necessary to ensure a viable, well-distributed population of owls. Wherever possible, each HCA contains a minimum of 20 pairs of owls. The maximum distance between HCAs is 12 miles. Our 20-pair criterion is based on models of population persistence and empirical studies of bird populations. We have chosen 12 miles as the maximum distance between HCAs because this value is within the known dispersal distance of about two-thirds of all radio-marked juveniles studied.

In several regions, current habitat conditions and owl densities do not allow us to follow this approach. The Committee, therefore, modified the guidelines for these regions. For example, in portions of the Oregon Coast Range, habitat is currently insufficient to fully stock 20-pair HCAs with owls. We have delineated 20-pair HCAs for this area, but they will be not be capable of supporting 20 pairs of owls for many years. In the meantime, individual-pair HCAs are prescribed around all known or future pairs.

A variety of strategies was used in other areas of special concern to help meet the intent of this strategy. In portions of the Cascade Range of northern Washington, insufficient habitat exists to support 20-pair HCAs over the long term because of inherent landscape patterns. In these areas, we delineated a network of smaller HCAs but shortened the maximum distance between them to 7 miles to facilitate dispersal.

In the Okanogan National Forest, portions of the eastern Cascade Mountains in Oregon, and northeast of Mount Shasta in California, relatively little owl habitat exists and spotted owls occur at low densities. We prescribe individual-pair HCAs around all known pairs.

Spotted owls on the Olympic Peninsula are probably isolated demographically from other populations by more than 60 miles of intensively managed State and private forest lands. We have established a large HCA for the Peninsula, but we also prescribe individual-pair HCAs around all known pairs outside the HCA. Our hope is that connectivity can be restored through application of innovative silvicultural techniques on State and private lands.

Land ownership patterns in the Coast Range of California limit our ability to establish 20-pair HCAs. We have tried to do so wherever possible, but we encourage California to work with private land owners to apply innovative silvicultural techniques to maintain or develop additional owl habitat for dispersal and breeding.

Logging (including salvage operations) and other silvicultural activities (with the exception of stand regeneration) should cease within HCAs. The Committee recognizes that allowances will have to be made for timber sales already under contract in HCAs and for sales necessary to meet Section 318 of Public Law 101-121.

We considered dedicating corridors of forests between HCAs to facilitate dispersal by juvenile owls, but decided corridors were unnecessary, provided at least 50% of the forest landbase outside of HCAs is maintained in stands of timber with an average d.b.h. of 11 inches or greater and at least 40% canopy closure. Lands, such as riparian corridors, streamside management zones, and special management areas for pileated woodpeckers and pine martens provide additional habitat for dispersing spotted owls.

We recommend retention of at least 80 acres of suitable owl habitat around the activity centers of all known pairs of owls in the managed forest, up to a total of seven per township. These centers will serve as nuclei of older forest that could become core areas for breeding pairs of spotted owls in the future, as the surrounding forest matures. If sustaining healthy populations of northern spotted owls in the managed forest is indeed possible, HCAs will no longer be necessary. Timber harvests that affect owl pairs outside the conservation areas are therefore viewed as experiments in managing for spotted owl habitat.

Consequences for the Northern Spotted Owl

The Committee believes this conservation strategy, if faithfully implemented, has a high probability of retaining a viable, well-distributed population of northern spotted owls over the next 100 years. The HCAs on Federal lands contain 925 known pairs of owls, and we estimate the actual number to be about 1465 pairs. Regeneration of younger stands within HCAs on Federal lands should enable the spotted owl population to increase to about 1759 pairs. These numbers are important, but only up to a point; the amount and spacing of habitat are as critical to the viability of the subspecies as the actual numbers.

Under a worst-case scenario, even with this conservation strategy fully implemented, a short-term loss of a significant portion of the existing population of northern spotted owls is likely. We do not take this loss lightly, but we believe the subspecies can withstand a reduction provided our strategy is followed. Even under the most stringent scenarios of habitat protection, a similar reduction in the number of existing pairs seems likely over time because many pairs of owls live in highly fragmented and marginal habitats isolated from other pairs.

Implementing the Conservation Strategy

Implementing a comprehensive strategy for the spotted owl requires a well-coordinated program of research, monitoring, and habitat management by State and Federal agencies and private landowners. Much room for improvement exists. So far as we can determine, for example, no plans have been made within or among agencies to determine what changes in population size or habitat conditions would trigger review and possible changes in management actions to ensure the welfare of the owl.

We urge that a coordinator and interagency staff (State and Federal) be assigned to oversee the conduct of the conservation strategy. The coordinating group would have the additional duty of recommending alterations to our conservation strategy. The plan put together by our Committee, however, is a strategy for the entire U.S. range of the northern spotted owl; no part of the strategy was designed to stand alone. Proposed changes must be considered in that light.

Assessment of Impacts

Our assignment was to develop a scientifically credible conservation strategy for the northern spotted owl. We recognize that the impacts of the strategy we propose will be analyzed by others. The immediate response, we expect, will be to focus almost solely on the short-term economic and social impacts of implementing the strategy as it affects availability of timber. This assessment is critically important. Adoption of the conservation strategy, however, has significant ramifications for other natural resources, including water quality, fisheries, soils, stream flows, wildlife, biodiversity, and outdoor recreation. All of these aspects must be considered when evaluating the conservation strategy. The issue is more complex than spotted owls and timber supply—it always has been.

EXECUTIVE SUMMARY

In response to the findings of the Interagency Scientific Committee that was appointed to study the northern spotted owl, the Secretaries of Agriculture and Interior, through the Chief of the Forest Service and the Director of the Bureau of Land Management, formed an interagency working group. The charge to this group was to analyze the economic impacts of implementing the recommendations of the Interagency Scientific Committee.

ECONOMIC IMPACT

The analysis of economic impacts in Washington, Oregon, and California compares implementation of current plans for National Forests and Bureau of Land Management Districts with implementation of the spotted owl conservation strategy. "Current plans" for the Forest Service are final Forest Plans or draft Forest Plans where plans have not been finalized. For the Bureau of Land Management, the currently planned sale level by District are used.

The analysis considers the dynamics of the timber market economy. The effects of a timber supply reduction on Federal lands in Washington, Oregon, and California were analyzed nationally in terms of changes in price, consumption, trade, and interregional shifts in supply. The resulting effects on regional prices were examined to estimate potential response of private supply.

Changes in prices will also affect revenues to the Federal Treasury and payments to counties in the three affected States. The analysis shows that rising prices will substantially offset reductions in timber volume. However, since the national economic situation in the future is uncertain, an analysis of the effect on revenues to the Treasury and payments to counties if prices remain constant was also done and shown here for comparison.

In summary, the analysis shows:

- Timber harvest on Federal lands will decline by 2.4 billion board feet by 1995 and remain at that level under the Interagency Scientific Committee recommendations. (Table I).
- Private harvest increases in response to higher stumpage prices will reduce the effects of the Federal decline by about half in the near term (1995), but this increase cannot be sustained, and by 2000, timber harvest from Federal and private ownerships combined will be 2.7 billion board feet below the current level. (Table II)
- Current planned Federal harvest levels would support about 53,000 jobs in total; about half of these are direct employment in the forest industry. The loss of jobs by 1995 in response to the Federal harvest volume reduction would be about 25,500 jobs. (Table III)
- The private harvest response would mitigate the employment effect in 1995 and net job loss would be about 13,300. Private owners will not be able to sustain this higher level of production. By the year 2,000, therefore, job loss as compared with the present will be about 28,000.
- Rising prices will help offset loss in revenues to the Treasury, but by 1995, implementation of the conservation strategy will mean a decline of $148 million and by 2000, a decline of $229 million as compared with revenues from currently planned levels of harvest. (Table IV)

- Since the future of the economy is uncertain, revenue loss was also estimated using constant prices over the decade of the 1990's. Under this scenario, returns to the Treasury would be $501 million lower in 1995 and 2000. (Table V)
- Payments to States and counties will decline despite rising prices, particularly in Oregon as a result of large declines in revenues from BLM lands. In total, the decline would be about $65 million per year by 1995 and $86 million per year by 2000 under the rising price scenario. (Table VI)
- As with revenues, the decline in payments to States/counties will be greater if constant prices are assumed. Under this scenario, about $172 million in revenue will be lost by these State and local governments. (Table VII)

Senator **Bumpers**. We have a very distinguished panel, which I will now ask to come forward. John Turner, Director of the Fish and Wildlife Service; Cy Jamison, Director of the Bureau of Land Management; Dale Robertson, Chief of the National Forest Service; Jack Ward Thomas, Chief Research Wildlife Biologist for the Forest Service and the chairman of the committee whose report we are here to discuss; and Dr. Douglas Houston, Research Biologist.

I am going to change our customary protocol because Dr. Thomas is the chairman of the group who prepared the report, and so, with that and with the deference of the other members of the committee, Dr. Thomas, I am going to call on you first, if you will. Your formal statement will be accepted, admitted in the record, and if you could summarize your statement, it would be of great help to this committee.

STATEMENT OF DR. JACK WARD THOMAS, CHIEF RESEARCH WILDLIFE BIOLOGIST, FOREST SERVICE, DEPARTMENT OF AGRICULTURE

Dr. **Thomas**. Mr. Chairman, I came here to answer questions. I have no statement outside of the submission of the documents you have.

Senator **Bumpers**. Could you just summarize the report for us briefly? You might describe for us the process you used, the procedures you used in developing the report, and pull the microphone a little closer, Dr. Thomas. I want to hear you and I know all of the audience would like to hear what you have to say also.

Dr. **Thomas**. Keep coaching. This is not my natural habitat.

Essentially, we were asked and chartered to develop a conservation strategy for the northern spotted owl that was scientifically credible. The four agency heads commissioned me as the chairman. We had a core committee of six scientists that were all from those agencies. They are listed in the document, each of them highly qualified. All of the six core committee members, with the exception of myself, are experts in spotted owls. Most of them have a research background with spotted owls that runs back a number of years.

The one exception was Mr. Joe Lint, from the Bureau of Land Management, who is not a research scientist, but has extensive experience with spotted owls.

We then included three observer advisors from each of the states, selected by the state wildlife agency heads, Oregon, Washington and California. They served with us throughout the entire period. We named an observer advisor from industry, one from the environmental community and one from the academic community. We also had four staff members that were experienced in development of the original supplemental environmental impact statement on spotted owls, and then one from the Fish and Wildlife Service, who is the spotted owl coordinator for that region.

In essence, there were 16 people on that committee, 13 of them represent, so far as I am concerned, the bulk of the people in the United States that know the most about spotted owls, both in terms of research and management.

We were given a short period of time to develop a scientifically credible conservation strategy. We essentially did that over some period of time.

Now, in addition to the observer advisors, the entire process was open to public scrutiny for five months of the process. Anytime anybody wanted to sat in and listen, watch what was going on, they were most welcome. We did close that operation down within the last month in order to get the report prepared, but until that time it was a wide-open process.

Essentially, we reviewed all the existing literature, published literature. We talked to all scientists currently conducting research on the northern spotted owl. We looked at all available data that could be made available to us for monitoring and otherwise. We convened three different workshops to talk to people experienced in the management of spotted owls and to people in the conservation/biology community that were expert in such strategy planning.

From that, we constructed what we considered to be the strategy. It was based on five principles. That blocks of habitat that contain multiple pairs are better than smaller. Those blocks closer together are better than blocks further apart. Contiguous habitats within the blocks is better than fragmented habitat. Habitat blocks connected by good habitat are better than those that are not so connected.

Essentially, scientists use a process called hypothetical deductive reasoning, which is different than the way lawyers consider things. They use facts to build a case. We use theory to construct a strategy, then we use information to test that strategy. There is a very distinct difference between those two things.

Essentially then, we begin to ask questions like how big is big enough for the conservation—habitat conservation areas. Essentially, what we did was to look at the distribution of owl pairs, habitat. We did not come issued a blank piece of paper or a slate on which to draw our strategy. It is built around land ownership. It is built around land allocation. It is built around land conditions, which includes past cutting and fires, et cetera. So, we looked at that and said, what can we do in terms of multiple pairs? We essentially found that we could find multiple pair areas that averaged around 20 pair.

Then, we subjected that hypothesis that that would give us sustained populations over time. We tested that both with empirical information; we tested it with modeling that considered all the life history attributes of the spotted owl of which we have adequate data. And we settled on a basic size of about 20 pair.

Then we said, how far apart? We essentially considered the information existed both from banding data and from radio- telemetered birds, and came to the conclusion the so-called Delphi technique.

Let me explain to you that the Delphi technique, when you have the 13 best experts in the world, is data in and of itself. This is not a bunch of people sitting around guessing. The data was there. It was a matter of evaluating that data and then making the determination at what level we would accept it. We took it at 66 percent. It will be questions of whether that was too liberal.

Let me explain that this species is in long-term decline, and perhaps 60 to 80 percent of the 1850 population may have disappeared. This strategy calls for giving up perhaps as much as 40 to 50 percent of the existing population. We dare not be anything but slightly conservative with the remainder of our strategy if it is to have credibility. So, we selected 66 percent because we thought that that was a reasonable level of surety.

It also should be marked that the habitat conservation areas that are outlined are not solid blocks of old growth. In fact, they average about 45 to 48 percent in old growth. Secondly, spotted owls occur a number of other places outside of old growth. It is best to talk about suitable habitat. To stick this on to an old-growth question is to go in the wrong direction.

So, those were the primary attributes of the system. I can almost assure you that any scientifically credible plan concerning this species will involve some kind of clusters, habitat conservation areas, if you will. We may debate today, and I would be happy to do that, on what the sizing of those things might be, and what the consequences of smaller or larger areas would be. But it is my advice to you and the advice of my committee that I doubt that any scientifically credible plan will not encompass some such idea as habitat conservation areas and their distribution.

We were asked to develop the plan that would assure scientific credibility, and we have tried to assure that by sending, by having the observers and then sending the plan out for what we call peer review. In order to keep from being accused of preselecting our peers, we asked the presidents of the Society of American Foresters, Society for Conservation Biology, the Wildlife Society, the American Ornithological Union and the Ecological Society to select us a reviewer. And we sent the plan to them in an almost-final form for review. Those reviews, four or five of those reviews, were quite favorable, and that is what assures scientific credibility in a scientific process.

We were instructed that we were to do this and not consider the economic evaluations, but to be sure that we had the biology nailed to the extent that we could.

Now, I want to confess something right up front.

Senator BUMPERS. Let me interrupt you. Are you saying that your charge was simply to deal with the viability of the owl and nothing to do with the economic impact of what your conclusions might come to?

Dr. THOMAS. That is correct.

Senator BUMPERS. Go ahead.

Dr. THOMAS. We did consider that the absolute best thing that we could do for the assured viability of the northern spotted owl is to cease and desist all harvest of suitable habitat. We recognize that essentially as a ridiculous proposition. And we could have finished our work in about a half a day, but it would not have been very useful. We essentially looked for the strategy that we could produce that would allow the continuation of some harvest of suitable habitat, and to ensure the continued viability of the northern spotted owl. We believe we ask for that. We ask for no more than that and no less than that.

But we did consider the practicality of the situation, and in doing so, we are giving up 40 to 50 percent of the existing population of the northern spotted owl.

With that, I think I can wait for the questions.

Senator BUMPERS. Mr. Turner.

Thank you, Dr. Thomas. We will get back to you.

STATEMENT OF JOHN TURNER, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

Mr. TURNER. Thank you, Mr. Chairman. I appreciate this opportunity to appear before this committee and discuss the Interagency Scientific Committee Report, and certainly an issue of vital importance to not only a region of this country, but the Nation. I think I speak for the other administrators of the Federal agencies here to tell you that we have taken this issue very seriously. I have spent a great deal of time on it, and realize it is not a simple issue.

Indeed, it does involve real people, and we certainly found that out when we went to the Northwest and met some of those people who depend on the timber industry. I think we have been doing as Senator McClure talked about, and that is climbing the tree limb by limb over the past several months, as we look at options for the future.

I am a new administrator, but I believe that the Thomas effort represents something unprecedented in the Federal Government, where four natural resource agencies get together cooperatively and ask a team of eminent scientists to address the needs of a species in question, and then step back and let them do their work. And fortunately, they did have a substantial amount of data and information and science to go on.

Over a six-month period of time, these scientists met with the most eminent spotted owl scientists available in this country, with managers, and administrators. They had a very open forum. It was open and accessible throughout the five months of their deliberation. We feel it is a very credible plan and represents good science. I do not think Dr. Thomas would state, nor do we as administrators feel that the scenario they gave us is iron clad. But we certainly embrace the principles and the findings that they bring to us on the conservation of the species.

I would like to make just a few comments on the listing process, because I know the focus is shifting to the Fish and Wildlife Service. That is an independent process going on at this Scientific Interagency Committee. Since last November, we have put a very distinguished team of scientists together that have put in long months. These members are from around the country. In reviewing the status of the spotted owl, the recommendation from our region is now coming to Washington. And what I have done is put together another team of scientists that will review and work that particular report over, and then make a recommendation to me as director.

Senator McClure asked about the need to consider critical habitat. I will make just a comment. If the species is to be listed, the subspecies, then the Fish and Wildlife Service is indeed required in the following year to take a look at critical habitat, and that must be based on public hearings and public notice, and indeed, we look at the economic ramifications of establishing critical habitat. And undoubtedly, if listed, we would certainly look at the suggestions that the Thomas Committee brings to us.

Some other comments on some of the cooperation with the passage of section 318. There were a lot of things that we had to do this last year. It was certainly the responsibility of the two land-managing agencies to select those timber sales which may affect—that "may affect" decision is their decision based on their biological analysis—and bring those to the Fish and Wildlife Service for conferencing. I think that has worked very well, considering the magnitude of the job.

BLM has brought us some 300 timber sales and those are complete. We conferenced with the National Forest Service in Oregon and Washington, and reported on some 1,300 timber sales. During the last several months, we have conferenced on almost 2,000 Federal actions as they relate to impact on the spotted owl. So, I am pleased with that cooperative effort.

Last year, the four agencies signed a cooperative agreement to work together. In April that was expanded to include not only the four Federal agencies, but the departments responsible for fish and wildlife in the States of Oregon, Washington and California. In California, we are also assisting them, working on a State timber practice procedure which will also be of assistance in addressing the spotted owl.

So, with that, Mr. Chairman, I would only like to say at this time, during the last several weeks and going on at this time, our agencies are also working, not only here in Washington, but in the region too. In fact, if the Fish and Wildlife Service makes a decision to list the species, we will have a procedure in place to continue the consultation process, and consultation guidelines. We feel that the transition would be an orderly one, and that activities out on those lands would continue.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Turner follows:]

STATEMENT OF JOHN TURNER, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, BEFORE THE SENATE SUBCOMMITTEE ON PUBLIC LANDS, NATIONAL PARKS AND FORESTS, COMMITTEE ON ENERGY AND NATURAL RESOURCES, ON THE REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE ADDRESSING CONSERVATION OF THE NORTHERN SPOTTED OWL

May 23, 1990

Mr. Chairman, thank you for the opportunity to discuss the findings of the interagency scientific committee -- the so-called Jack Ward Thomas report -- addressing conservation of the northern spotted owl.

First of all, let me say that the process resulting in the interagency scientific committee's conservation strategy for the owl was probably unprecedented in the fields of conservation biology and wildlife management. Four agencies of the Federal government cooperatively selected and appointed a group of preeminently qualified scientists to address the needs of the species, and then stepped back to let them do their work.

Over a period of 6 months, the committee not only sought out and consulted other scientists, managers, and administrators who could shed light on the task, but provided an open forum for the widest possible spectrum of persons and groups interested in this issue to present their views on the subject. Undoubtedly, this has been one of the most open and accessible scientific inquiries ever conducted. The strategy it produced represents a credible plan for managing the owl so that it will survive essentially throughout its present range. I want to point out that Jack Ward

Thomas has stated that the report is a compromise between the habitat needs of the owl and harvest of timber.

Related to, but not dependent on the recommendations of the scientific committee is the decision that must be made on whether the owl should be listed as a threatened species, as we proposed last June 23. In order to ensure that the best available scientific information would be brought to bear on this question, we appointed a team of scientists within the Fish and Wildlife Service to conduct a review of the status of the species, analyze it, and make a recommendation. We expect to conclude our review before June 23, 1990, as required by the Endangered Species Act. I see no likelihood of a dramatic change in the scientific evidence, and I cannot easily imagine assembling another similarly qualified review team.

The Fish and Wildlife Service has also cooperated closely with the Bureau of Land Management and the Forest Service in a variety of activities, including those necessary to carry out its role in implementing section 318 of the 1990 Interior and Related Agencies Appropriations Act.

Examples include our continuing conference with the Bureau and the Forest Service under section 7(a)(4) of the Endangered Species Act to provide timely and constructive reviews of timber sales and other activities as requested by those agencies. Conference has been completed for the Bureau's section 318 timber sale program in Oregon, with an overview analysis, 79 sale-specific informal conference reports, and 5 district-wide informal conference reports. These reports covered the impacts of over 300 timber sales, and included recommendations intended to minimize or avoid impacts to spotted owl nesting, foraging, and dispersal habitat.

In California, the Bureau is informally conferring on any action that may adversely affect the owl and has provided guidance to its Districts on conferencing procedures.

An informal conference report on the Forest Service's section 318 sale program on the National Forests in Oregon and Washington for fiscal years 1989-1990 has also been completed. This report addresses the cumulative effects of nearly 1,300 timber sales, and further analyzes the effect of timber sales to individual spotted owl pairs. The Service provided advisory recommendations designed to minimize or avoid adverse impacts to spotted owl nesting, foraging, and dispersal habitat. On the National Forests in California, conferencing has been completed on 197 proposed Federal actions.

The agencies have also been active in establishing an effective framework for cooperation on this issue. On April 13, 1990, the Regional Directors of the Fish and Wildlife Service, Forest Service, and National Park Service, the State Director of the Bureau of Land Management, the Directors of the Oregon Department of Fish and Wildlife and the Washington Department of Wildlife, and the Secretary of the California Resources Agency signed a new Interagency Agreement to cooperate on the conservation of the northern spotted owl.

A year in development, this agreement expands the 1988 Interagency Agreement among the four Federal agencies so that State authorities are now included as well. This group will provide an increased opportunity for the Federal and State agencies to work toward resolution of common issues and concerns relative to this species, and is fully expected to play a role in managing the owl situation regardless of the decision on the listing.

The Service is also working closely with the State of California to develop forest practice regulations. If the owl is listed, these regulations should be ready for immediate implementation and would prevent take of owls or habitat until a Habitat Conservation Plan (HCP) under Section 10 of the Endangered Species Act can be completed. Development of measures related to private timber harvest has been the primary focus of this cooperative effort of the Service and the State. Completion of the HCP and NEPA process could take up to a year.

Thank you again, Mr. Chairman, for the opportunity to address this important issue. I will be pleased to respond to questions.

Senator BUMPERS. Thank you, Mr. Turner.

Mr. Jamison.

STATEMENT OF CY JAMISON, DIRECTOR, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR

Mr. JAMISON. Thank you, Mr. Chairman. Two laws provide the guiding principles and policies for our management activities in BLM. They are the Oregon and California Railroad Grant Lands Act, and the Federal Land Policy and Management Act of 1976 or better known as FLPMA.

FLPMA is important for its emphasis on land-use planning processes as a basis for land-management decisions, and its reiterations of the principles of multiple use and sustained yield.

BLM manages old-growth timber in accordance with timber management plans. These plans include the harvesting of old- growth timber as well as establishing several areas for the protection of other resource values and for scientific research. We are continuing to reexamine our management practices in light of recent litigation dealing with the protection of the northern spotted owl habitat, and in preparation for developing resource management plans for the 1990s.

Of the 2.4 million acres we manage in western Oregon, 1.6 million acres are classified as commercial forest lands. It is especially important to note that BLM timber land in western Oregon is not well blocked, but in a checkerboard pattern. Most BLM tracts are not undisturbed, but are fragmented as a result of several decades of timber harvest and forest regeneration. Thus, they represent a rich mosaic of new clear-cuts, young plantations, pole and mature size stands, as well as old growth.

We estimate that about 448,000 acres of old-growth timber remain on BLM-administered lands in western Oregon. Of this total, about 143,000 acres are protected from timber harvest through existing management plans. With respect to our annual allowable sell commodity, old-growth timber accounts for about 376 million board feet, or about 32 percent of our current sustained yield level of 1.176 billion board feet.

We are developing resource management plans for western Oregon with a great deal of public involvement in the process. Our plans will be completed in fiscal year 1992 and implemented in fiscal year 1993, addressing the full range of issues, including the question of protection for ecologically significant old-growth forest. Also, we will determine a new allowable sale quantity.

Regarding section 318 of the 1990 Appropriations Act, BLM is directed, and what we intend to do is, to meet the volume commitments of that sale, for those sales figures.

While we continue to act under section 318, it is important to note that there is a coordinated effort to provide cooperation on management and research of the spotted owl. The Interagency Scientific Committee, chaired by Jack Ward Thomas, was formed to develop its scientific credible conservation strategy. That scientific committee report proposes a two part conservation strategy—one, large habitat conservation areas, or HCAs, to ensure the owl's long-term survival, and two, research and monitoring to test the adequacy of the strategy.

Outside the HCAs, protection would have to be given to categories 3 and 4, and we would follow the 50-11-40 rule. This requires that we maintain 50 percent of the forest trees averaging 11 inches in diameter or larger, with a 40 percent canopy closure. BLM managers and staff will analyze these recommendations to determine what additional management options may be available. A holistic approach to old-growth forest management will better consider all resource values in addition to providing protection for the northern spotted owl.

There are aspects and recommendations of the report which, if adopted, would have far-reaching and severe economic impacts on northwest logging and milling operations, as well as the reduction of revenues to counties from timber sale activities. Our economic analysis of the impact of the Scientific Committee Report starts from our existing plan sale level of 1.176 billion board feet.

In summary, it shows that the annual sale of timber from BLM lands in western Oregon would be reduced by 62 percent. We estimate that about 7,670 jobs would be lost, and that the western Oregon counties would lose $85.2 million or 53 percent of current revenues from BLM timber sales. These are significant impacts. I think it is important that we analyze all of our management options, and consider long-term solutions.

This Administration is mindful of its commitment to uphold the spirit and letter of the law as contained in the Endangered Species Act of 1973, as well as other relevant laws. The operation of government never has been and never should be one sided or unilateral. The socioeconomic impacts of such a regionally critical issue must be addressed.

The Administration is very aware of the serious economic impact if the spotted owl is listed as threatened or endangered. We must keep in mind the full range of impacts that result from single species protection. When we protect just one species or just one habitat, we are more than likely creating additional problems for other species. It seems logical that a holistic approach to forest management would better consider all resource values.

In closing, I would like to echo the President's concern that we have a balanced policy. Both the human and environmental factors have to be considered.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Jamison follows:]

MAY 23 1990

STATEMENT OF CY JAMISON, DIRECTOR, BUREAU OF LAND MANAGEMENT, UNITED STATES DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON PUBLIC LANDS, NATIONAL PARKS, AND FORESTS, COMMITTEE ON ENERGY AND NATURAL RESOURCES, UNITED STATES SENATE, ON RESPONSE TO THE REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE TO ADDRESS THE CONSERVATION OF THE NORTHERN SPOTTED OWL.

Good morning. I appreciate the opportunity to appear here today to discuss the public lands impacts of implementing the Conservation Strategy in the Report of the Interagency Scientific Committee and the Bureau of Land Management's (BLM) response to the Report.

OVERVIEW OF BLM AUTHORITIES AND PROGRAM

The lands in Oregon and Washington administered by the Bureau of Land Management are managed in accordance with a wide variety of Federal laws, Executive Orders, regulations, and policy statements. The Oregon and California Railroad Grant Lands Act of 1937 (O and C Act) and the Federal Land Policy and Management Act of 1976 (FLPMA) provide guiding principles and policies for management activities. The O and C Act states that lands classified as timberlands or powersite-lands valuable for timber are to be managed for permanent forest production and the timber on such lands is to be sold, cut and removed in conformity with the principles of sustained yield forest management. The stated purpose of such timber harvesting is to provide a permanent source of timber supply, protect watersheds, regulate stream flow, contribute to the economic stability of local communities and industries and provide recreational facilities. FLPMA is especially important for its emphasis on a land use planning process as the basis for land management decisions and its reiteration of the principles of multiple use and sustained yield. So, on Oregon and California grant lands timber production is given priority on lands determined to be suitable, but we also consider other appropriate multiple-use benefits.

PLANNING AND MANAGEMENT OF TIMBER IN WESTERN OREGON

Of the 2.4 million acres we manage in western Oregon, 1.6 million acres are classified as commercial forest land. Most are available for intensive management of timber. It is especially important to note that BLM timberland in western Oregon is not well blocked but most commonly exists as alternate one section tracts (640 acres) interspersed with comparable private lands in a checkerboard pattern. Furthermore, most BLM tracts are not, themselves, undisturbed but exhibit fragmented age classes as a result of several decades of timber harvest and forest regeneration. Thus, they represent a rich mosaic of new clear-cuts, young plantations, pole and mature size stands as well as old growth.

In accordance with the planning requirements in FLPMA, we are developing Resource Management Plans for western Oregon with a great deal of public involvement in the process. Those plans are designed to preserve and protect wild and scenic rivers, areas of critical environmental concern, unsuitable or fragile land, habitat for fish and wildlife, including endangered and threatened species, wilderness areas, cultural and historic sites and recreational facilities. All of these non-timber values can and are routinely accommodated on BLM lands in western Oregon within the timber dominant framework of our legal mandate.

These plans, which will be completed in Fiscal Year 1992 and implemented in Fiscal Year 1993, will address the full range of issues, including fish and wildlife resource management. In addition, we operate under annual timber sale plans, consistent with the Resource Management Plans. We are reviewing those plans in light of the most recent developments regarding conservation of the northern spotted owl and requirements of section 318 of the 1990 Appropriations Act for Interior and Related Agencies.

INTERAGENCY COORDINATION FOR CONSERVATION OF THE NORTHERN SPOTTED OWL AND THE EFFECTS OF THE ENDANGERED SPECIES ACT

On June 23, 1989, the Fish and Wildlife Service (FWS) published a proposal to list the northern spotted owl as threatened throughout its range. This proposal required BLM to confer with FWS on actions likely to jeopardize the continued existence of the spotted owl. It is anticipated that the FWS will make a decision on or before June 23, 1990, on whether or not to list the owl as threatened or endangered.

If the northern spotted owl is listed as threatened or endangered, FWS will be in charge of development of a Recovery Plan.

Previously in August of 1988, the National Directors of BLM, FWS, Forest Service, and the National Park Service entered into an agreement to provide for cooperation on management and research of the spotted owl. In October 1989, an Interagency Scientific Committee under the chairmanship of Jack Ward Thomas was formed under this agreement to develop a scientifically credible conservation strategy for the northern spotted owl.

BLM has been monitoring northern spotted owls since the 1970's and in the last 2 years has concentrated on inventories for the owls in areas proposed for timber sales. To date, about 500 pairs have been discovered on BLM lands.

About 1,200 owls have been banded to help with demographic studies. Radio telemetry studies have been conducted on several owl pairs to determine range. Owl sites in proximity to timber harvest units are monitored over time to determine impact of harvest activities on the site.

IMPLEMENTATION OF SECTION 318 OF THE 1990 APPROPRIATIONS ACT FOR INTERIOR AND RELATED AGENCIES

Section 318 was a response to a timber shortage in the northwest due to litigation concerning the spotted owl and resultant injunctive action. Enacted in December 1989, it provides direction to BLM and the Forest Service to provide a mandated level of timber sales for fiscal year 1989 and 1990 and additional habitat protection for the northern spotted owl.

Under Section 318 and the Conference Report, BLM's responsibilities are to:

- Offer volumes of timber from Western Oregon in FY 1990 to meet an aggregate level of 1.9 billion board feet for FY 1989 and 1990.
- Designate and protect 12 owl habitat sites in addition to the 110 under agreement with the Oregon Department of Fish and Wildlife and refrain from offering timber sales in these new areas in FY 1990.
- Appoint BLM District Advisory Boards to review and provide recommendations on timber sales to meet mandated timber sale levels and consider recommendations of those boards on prospective timber sales needed to meet the sale levels established.
- Consider carefully any recommendations made by the Interagency Scientific Committee in development of new land and resource plans.
- Consider recommendations of the Fish and Wildlife Service (FWS) on those timber sales conferred upon pursuant to section 7(a)(4) of the Endangered Species Act of 1973, or, if the spotted owl is listed as an endangered or threatened species, consult with the Fish and Wildlife Service under section 7(a)(2) of that Act, prior to offer of timber sales.
- Submit monthly reports to Congress updating findings and progress, including information on the extent to which advisory board recommendations were integrated into timber sale decisions.

We have been successful in carrying out our responsibilities under section 318 thus far. We have offered for sale 1.266 billion board feet. BLM expects to offer the remaining 634 million board feet before the end of the fiscal year as required. The requisite number of owl sites, 122, have been designated. Conferencing between BLM and FWS on the FY 1990 western Oregon timber sale plans has been completed. The timber sale plans and available FWS recommendations were provided for use by the Advisory Boards during their meetings. BLM Advisory Boards were appointed in November and have nearly completed their review of our FY 1990 sale plan.

REPORT OF THE INTERAGENCY SCIENTIFIC COMMITTEE TO ADDRESS CONSERVATION OF THE NORTHERN SPOTTED OWL

The Scientific Committee Report was released on April 4, 1990. It proposes a two part conservation strategy requiring (1) that steps be taken to ensure that an adequate amount and distribution of habitat be protected to ensure the owl's long-term survival; and (2) research and monitoring to test the adequacy of the strategy and to seek ways to produce and sustain suitable owl habitat in managed forests. The report advocates protecting large blocks of habitat, termed Habitat Conservation Areas (HCA's). These HCA's would fall into four categories: (1) blocks capable of supporting at least 20 pairs of owls; (2) blocks that could support 2 to 19 pairs; (3) site-specific blocks to support individual pairs, and (4) blocks that provided habitat linkage or are potential future nest sites. With the exception of forest regeneration activities, timber harvesting and certain other silvicultural activities would be banned in the HCA's. In addition, we would follow the 50-11-40 rule outside the HCA's. This means that we would be required to maintain 50 percent of the forest with trees averaging 11 inches in diameter or larger and with a 40 percent canopy closure.

The Scientific Committee Report looked at the issue from solely a scientific standpoint. It recommends a habitat conservation strategy which the Committee believes would ensure survival of the species. I would commend the Report and its authors. However, there are aspects and recommendations of the Report which, if adopted, would have far reaching and severe economic impacts on northwest logging and milling operations, as well as the reduction of revenues to counties from timber sale activities.

BLM-FOREST SERVICE ECONOMIC ANALYSIS AND BLM RESPONSE

On April 11, an interagency team was formed by BLM and the Forest Service to study the economic effects of adopting the Interagency Scientific Committee Report. The team has prepared a report on the range of potential economic effects that could occur if the Scientific Committee Report were implemented.

The timber harvest level data used in the economic analysis are the latest available for BLM and the Forest Service. The starting point for BLM is the existing planned sale level of 1.176 billion board feet.

In summary, our Economic Analysis shows that annual sale of timber from BLM lands in Western Oregon would be reduced 62 percent. We estimate that 7,670 jobs would be lost and the western Oregon counties could lose $85.2 million each year or 53 percent of current revenues from BLM timber sales.

These are obviously significant impacts and I think it is important that we analyze our management options and consider long term solutions.

BLM has not yet determined to what degree the Committee's recommendations might be adopted, irrespective of FWS's decision under the Endangered Species Act. Guidance from Congress on the use of this Committee's work is in the 1990 Appropriations Act Conference Report. It is expected that BLM will consider carefully any recommendations made by the Interagency Scientific Committee in the development of its new land and resource management plans.

The development of these plans for the western Oregon districts is currently in progress with implementation scheduled in FY 1993. BLM will thoroughly analyze the recommendations made and determine what management options are available for accomplishment during the period of time prior to the implementation of the new plans. In the interim, BLM will develop its proposed sale programs for FY 1991 and FY 1992 so as to preserve as many management options as possible in consideration of the Scientific Committee Report recommendations.

LONG TERM SOLUTIONS

This Administration is mindful of its commitment to uphold the spirit and letter of the law as contained in the Endangered Species Act of 1973 and obligation under section 318 of the 1990 Appropriation Act. The Scientific Committee Report is an important step in that process which will culminate in the listing decision of the Director, U.S. Fish and Wildlife Service, after consideration of all relevant factors.

The operation of government has never been, and should never be, one-sided or unilateral. The socio-economic impacts of such a regionally critical issue must be addressed. The Administration is very aware of the serious economic impact if the spotted owl is listed as threatened or endangered.

One has to keep in mind the full range of impacts that the protection of a species really results in. When we protect just one species or just one habitat we are more than likely creating additional problems for other species. It seems logical that a holistic approach to forest management would better consider all resource values in addition to providing protection to the northern spotted owl. In closing, I would like to echo the President's concern that we have a "balanced policy." Both the human and environmental factors have to be considered.

This concludes my statement.

Senator **Bumpers**. Thank you.

Chief Robertson.

STATEMENT OF F. DALE ROBERTSON, CHIEF, FOREST SERVICE, DEPARTMENT OF AGRICULTURE

Mr. **Robertson**. I will make a short statement of what the Forest Service plans to do right at this point. I think your opening statement gave a very good background of where we have been on the spotted owl, and other people have talked about Dr. Thomas, the report that his committee prepared, so we now have what the committee considers as scientifically, credible strategy for dealing with the spotted owl. The Forest Service and BLM have worked together to determine the economic impacts of that report.

Where the Forest Service is on this, we completed the analysis. We are awaiting the decision on June 23rd by the Fish and Wildlife Service, and if it is listed, that will trigger the Endangered Species Act, and we will then work with the Fish and Wildlife Service on this consultation process, on how we can consult with them under the Endangered Species Act on our programs that could affect the spotted owl. And as well, we will cooperate and work with the Fish and Wildlife Service on a recovery plan.

Now, if it is not listed on June 23rd, or the listing is delayed for six months, the Forest Service is prepared to proceed to deal with the recommendations from the Interagency Scientific Committee under the requirements of the National Forest Management Act and—the regulations implementing that act.

So, the Department of Agriculture and the Forest Service will be prepared to immediately, after June 23rd, if not listed, proceed with a proposed alternative on how we will deal with these recommendations, and have a 60-day review period and meet the September 30 due date that is in Section 318, that we have a revised spotted owl decision by September 30.

[The prepared statement of Mr. Robertson follows:]

Final

STATEMENT OF
F. DALE ROBERTSON, CHIEF
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Before the
Subcommittee on Public Lands, National Parks, and Forests
Committee on Energy and Natural Resources

United States Senate

Concerning the "Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl."

May 23, 1990

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I appreciate the opportunity to participate in this hearing concerning the management of old growth forests in the Pacific Northwest. I am accompanied today by Jim Overbay, Deputy Chief for the National Forest System.

I would like to begin by offering a brief perspective on the National Forest System. The National Forests and National Grasslands covers over 191 million acres or about 8.5 percent of the Nation's land surface area. These lands hold some of our most valuable natural assets, including watershed, timber, minerals and wildlife. They have served Americans well in the past, and they must continue to serve the many needs of our people in the foreseeable future.

The policies and priorities that guide National Forest management have changed over the nearly 100 year history of the National Forest System, because the will of the people and political guidance have changed. The changes we are currently experiencing could be the most rapid and far-reaching we have ever seen. But, they are by no means the first major changes to occur in how this Nation's public lands are managed.

Current Situation

During the last few of weeks, there has been a great deal of activity in response to the Interagency Scientific Committee's Conservation Strategy for the Northern Spotted Owl. Before I respond to the specific questions you asked, I would like to summarize some of the findings and information we have released recently.

Currently, the Forest Service is reviewing its December 1988 decision on spotted owl habitat management for the Pacific Northwest in light of the Interagency Scientific Committee (ISC) recommendations as directed by Section 318 of the 1990 Interior Appropriations bill. We plan to have a new Record of Decision in place by September 30, 1990.

To maintain the option to implement the ISC recommendations, if that is what we decide to do, both the Pacific Northwest (R-6) and Pacific Southwest (R-5) Regions are following the report's guidelines for planning timber sales that have not been awarded, but are located within spotted owl habitat protection areas, called Habitat Conservation Areas (HCAs) in the ISC Report.

According to the ISC guidelines, timber sales planned for the FY 1990 sale program that are within Habitat Conservation Areas may proceed except where a pair of owls are within 1/2 mile of a sale unit. The report recommends that these sales be modified to avoid significant impacts on the pair.

Upon receipt of the ISC report, Regions 5 and 6 delayed awarding new sales in habitat protection areas pending a review to determine how much volume is within 1/2 mile of a pair of owls. In Region 6, about 150 million board feet in these areas are presently delayed because the sales or units are within 1/2 mile of a pair of owls. In Region 5, about 69 million board feet are within 1/2 mile of a pair of owls. Both Regions are proceeding with sales that are not within 1/2 mile of a pair of owls. These sales total 1.25 billion board feet in Region 6 and 438 million board feet in Region 5.

After studying the ISC report, we have determined that timber harvest levels would be reduced 48 percent from current levels on Federal lands containing spotted owl habitat in Oregon, Washington and California. Some of this reduction also reflects changes between the draft and final Land and Resource Management Plans for those National Forests without an approved final plan. Our current plans call for a timber harvest level of 3.9 billion board feet for the National Forests in the Pacific Northwest and Northern California that contain spotted owls. Under the projected final forest plans, the timber harvest level for these forests is expected to be about 3.2 billion board feet. If the Forest Service were to adopt the ISC habitat protection plan, the harvest level is estimated to be about 2.2 billion board feet for these Forests.

If timber harvest levels are reduced on Federal lands, we expect to see an increase in timber harvests level on privately owned land and an increase in stumpage prices. This increase would reduce the effects of lower Federal timber harvest by about 50 percent in the short-term, but the increased harvest on private land could not be sustained in the long-term.

Current planned Federal harvest levels support about 53,000 jobs. By 1995, about 25,400 jobs could be lost in response to both final forest plan implementation and full implementation of the ISC recommendations.

Rising prices would partially offset losses in revenues to the Treasury, but by 1995, full implementation of the ISC recommendations could mean a decline of $148 million in revenues.

Future Options

The Forest Service has only three major approaches to choose from in deciding how best to manage our public lands and their resources: (1) preserve and protect the natural conditions as much as is possible; (2) develop and manage public lands for the highest value goods and services to meet society's short and long-term needs for resources, and (3) provide a judicious balance between using public lands to safeguard natural conditions and processes and using them to help meet people's needs for resources, that is a combination of approaches 1 and 2. These approaches have been available to us for well over a century and they remain the principal management options available to us now.

The Forest Service, throughout its history, has tried to develop the scientific basis and social support for judicious balance between protecting nature and producing products. The debate, conflict and controversy surrounding old-growth forests, spotted owls, and timber supplies in the Pacific Northwest force society to once again examine its preference for the approach to use in managing the National Forest System.

Our emphasis in balancing the dual tasks of protecting nature and producing goods and services has changed over the years. We are moving steadily in the direction of protecting healthy, diverse and productive ecosystems. The evidence of this in clear in the RPA Program, Forest Plans, and our priorities in research and cooperative assistance. As we seek solutions to the old growthforest/spotted owl/timber supply issue, let us keep in mind the larger perspective that public lands are ecological systems that have and will continue to provide multiple benefits to people.

Protection of Old Growth Forests

We are taking several actions to protect old growth forests in the Pacific Northwest. Last Fall, we announced our "Position Statement on National Forest Old-growth Values." A copy of this position statement is attached to my testimony. In summary, our position is that we recognize the many significant values associated with old growth and we will manage the National Forests to provide for these values. Specific decisions on existing old growth stands will be made through the Forest Planning process and in full compliance with NEPA. The Planning Regulations (36 CFR 219) for implementing Section 6 of the National Forest Management Act require maintenance of viable populations of all native vertebrate species well distributed throughout their ranges.

The long-term solution for protecting the ecological values inherent in old and mature forests while maintaining access to them for high quality products and services is to manage them to perpetuate the values found in a mature ecosystem while taking some of what they produce for human use. The amount and location of protected areas and the amount and location of managed areas is a publicpolicy question. Scientific and technical analysis can only inform us of the consequences of our options; they do not offer unique or guaranteed solutions. Once basic land allocation decisions are made, scientists and managers can deal with how best to meet the specific goals for particular areas of land.

To address the goal of perpetuating ecological values in managed forests and rangelands we have initiated the program "New Perspectives for Managing the National Forest System" in all regions. This program will develop, test, and demonstrate practical ways to blend protection of the whole land community with production of natural resources; manage whole ecosystems rather than single species or just one resource at a time; and bring scientists, educators, affected publics and industries, and professional resource managers into more effective partnerships in carrying out conservation and research programs. The basic management principle behind New Perspectives is that a healthy, diverse, and productive environment is key to sustainable use of natural resources, and both are key to the survival of the human species. We like to think of New Perspectives as "protection plus production."

Several aspects of New Perspectives are already being tested for their utility in perpetuating old-growth values in the Pacific Northwest. Let me cite seven practices: (1) minimizing the fragmentation of continuous forests during harvesting, (2) retaining biological legacies of standing live and dead trees and fallen logs, (3) restoring naturally diverse forests following harvest, (4) maintaining a forested landscape that allows for free movement of plants andanimals throughout the ecosystem, (5) active participation of people affected by local decisions in designing and carrying out management practices, (6) involvement of scientists in the design and testing of new approaches, and (7) designation of an individual to assure that monitoring is completed and results are communicated to interested people. These can all be seen in action on the Siskiyou and Willamette National Forests.

The practices I cite provide for a healthy, diverse, and productive forest that maintains some of the structure and function that come from having old-growth in the landscape. They neither maximize old growth preservation nor harvest of wood fiber. They are a judicious balance of goals, values, and uses.
Old-growth forest preservation and timber harvest are inherently incompatible--at least by modern day standards. Legislation that allocates land areas to one primary value or use over another could resolve the conflict between old growth preservation and maximizing timber harvest by separating goals either by time or space. That is essentially how wilderness area designation resolves the potential conflict between mutually exclusive land uses. If we are to bring this controversy to at least a temporary close we may need legislation that finds a sufficient solution to how much old growth is to be preserved, how much is to be managed under New Perspectives concepts, and how much is to be managed for higher timber harvests.

I think it is important to remember that when we decide to favor certain resource benefits over others, we should do so with full and conscious understanding of what we are getting and what we are giving up. When we harvest trees we give up some values and uses over the short term. When we preserve areas we also give up some values and uses over the short term. When we push either goal to the extreme our short term benefits often come at the expense of long-term loss of options. We are convinced there is a middle ground that allows people to enjoy the many benefits of healthy, diverse forests that are continuously productive of the good and services that support our lifestyles and economies. That middle ground includes management of some old-growth forests to emphasize either their natural conditions and values or their ability to yield highly desired products and management of the rest to provide a blend of their natural values and their products.

Our forest and rangeland ecosystems have great capabilities to assure a quality living environment and meet society's needs. But they do not have unlimited capabilities. We cannot continue to expect these lands to provide more of everything for everybody. And we cannot continue to approach ecosystem management as a process of continually slicing the ecosystem pie into ever smaller special-use pieces. Ecosystems change just as scientific knowledge and people's goals and expectations change. We must approach stewardship of public forests with an eye to their long-term resilience, sustainability, diversity, and productivity. Preservation of some stands is an important part of how to accomplish that desired condition. Judicious management is a more important part.

This completes my testimony. Jim Overbay and I are available to answer your questions or provide additional information.

ATTACHMENT 1

POSITION STATEMENT ON NATIONAL FOREST OLD-GROWTH VALUES

The Forest Service recognizes the many significant values associated with old-growth forests, such as biological diversity, wildlife and fisheries habitat, recreation, aesthetics, soil productivity, water quality, and industrial raw material. Old growth on the National Forests will be managed to provide the foregoing values for present and future generations. Decisions on managing existing old-growth forests to provide these values will be made in the development and implementation of forest plans. These plans shall also provide for a succession of young forests into old-growth forests in light of their depletion due to natural events or harvest.

Old-growth forests encompass the late stages of stand development and are distinguished by old trees and related structural attributes. These attributes, such as tree size, canopy layers, snags, and down trees, generally define forests that are in an old-growth condition. The specific attributes vary by forest type. Old-growth definitions are to be developed by forest type or type groups for use in determining the extent and distribution of old-growth forests.

Where goals for providing old-growth values are not compatible with timber harvesting, lands will be classified as unsuitable for timber production. Where these goals can be met by such measures as extending the final harvest age well beyond the normal rotation or by using silvicultural practices that maintain or establish specific old-growth values, lands will be classified as suitable for timber production. In making these determinations, consideration shall be given to the extent and distribution of old growth on National Forest lands that are Congressionally or administratively withdrawn from timber harvest, as well as adjacent ownerships.

Old-growth values shall be considered in designing the dispersion of old growth. This may range from a network of old-growth stands for wildlife habitat to designated areas for public visitation. In general, areas to be managed for old-growth values are to be distributed over individual National Forests with attention given to minimizing the fragmentation of old growth into small isolated areas. Old growth on lands suitable for timber production and not subject to extended rotations is to be scheduled for harvest to establish young stands which more fully utilize potential timber productivity and also meet other resource objectives.

Regions with support from Research shall continue to develop forest type old-growth definitions, conduct old growth inventories, develop and implement silvicultural practices to maintain or establish desired old-growth values, and explore the concept of ecosystem management on a landscape basis. Where appropriate, land management decisions are to maintain future options so the results from the foregoing efforts can be applied in subsequent decisions. Accordingly, field units are to be innovative in planning and carrying out their activities in managing old-growth forests for their many significant values.

GENERIC DEFINITION AND DESCRIPTION OF OLD-GROWTH FORESTS

10/11/89

Purpose and Scope

The following describes the ecologically important structural features of old-growth ecosystems. Measureable criteria for these attributes will be established in more specific definitions for forest types, habitat types, plant associations or groupings of them. The intent of the generic definition is to guide design of specific definitions and new inventories that include measurement of specific attributes. Although old-growth ecosystems may be distinguished functionally as well as structurally, this definition is restricted primarily to stand-level structural features which are readily measured in forest inventory.

Definition

Old-growth forests are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function.

Description

The age at which old-growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions and disturbance regime. For example, old-growth in fire-dependent forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, old-growth is typically distinguished from younger growth by several of the following attributes:

1. Large trees for species and site.
2. Wide variation in tree sizes and spacing.
3. Accumulations of large-size dead standing and fallen trees that are high relative to earlier stages.
4. Decadence in the form of broken or deformed tops or bole and root decay.
5. Multiple canopy layers
6. Canopy gaps and understory patchiness.

Compositionally, old growth encompasses both older forests dominated by early seral species, such as fire-dependent species, and forests in later successional stages dominated by shade tolerant species. Rates of change in composition and structure are slow relative to younger forests. Different stages or classes of old growth will be recognizable in many forest types.

Sporadic, low to moderate severity disturbances are an integral part of the internal dynamics of many old-growth ecosystems. Canopy openings resulting from the death of overstory trees often give rise to patches of small trees, shrubs, and herbs in the understory.

Old-growth is not necessarily "virgin" or "primeval." Old-growth could develop following human disturbances.

The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.

Table 1--Volume of Timber Offered for Sale on Federal Lands After Implementation of the Interagency Scientific Committee Conservation Strategy.

Forests and Districts Affected by ISC Strategy	Current Plans	Actual or Projected Final Plans		Actual or Projected Final Plans plus ISC Strategy	
		1995	2000	1995	2000
		(Million Board Feet)			
Washington National Forests					
Gifford Pinchot[1]	388	334	334	189	189
Mt. Baker-Snoqualmie[1]	170	108	108	45	45
Okanogan	63	63	63	59	59
Olympic[1]	186	111	111	43	43
Wenatchee	136	136	136	83	83
Subtotal	943	752	752	419	419
Oregon National Forests					
Deschutes[1]	202	100	100	91	91
Mt. Hood[1]	255	193	193	154	154
Rogue River[1]	137	120	120	85	85
Siskiyou	160	160	160	119	119
Suislaw	335	335	335	198	198
Umpqua[1]	340	334	334	273	273
Willamette[1]	568	491	491	333	333
Winema[1]	199	115	115	110	110
Oregon BLM Districts					
Salem	239	239	239	62	62
Eugene	223	223	223	59	59
Roseburg	247	247	247	103	103
Medford	213	213	213	123	123
Coos Bay	254	254	254	96	96
Subtotal	3,385	3,024	3,024	1,805	1,805
California National Forests					
Klamath[1]	200	142	142	110	110
Mendocino[1]	93	84	84	66	66
Shasta-Trinity[1]	226	224	224	129	129
Six Rivers[1]	175	150	150	92	92
California BLM District					
Ukiah	9	9	9	3	3
Subtotal	699	609	609	395	395
Total Public	5,027	4,385	4,385	2,619	2,619

[1] The timber volume shown for projected final plans in these forests could change up to plus or minus 10 percent in actual final plans. A mid-point of this range is shown in order to assess the impact of implementing the ISC strategy.

NOTE: Final BLM new plan sale levels will not be known until the new plans are completed in 1992. Existing plan levels are carried into years 1995 and 2000 for comparative purposes only.

Senator BUMPERS. Thank you very much, Chief.
Dr. Houston.

STATEMENT OF DR. DOUGLAS B. HOUSTON, RESEARCH BIOLOGIST, NORTHWEST PARKS RESEARCH GROUP, OLYMPIC NATIONAL PARK, NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR

Dr. HOUSTON. Mr. Chairman, it is a pleasure to appear before the Subcommittee today to discuss the report of the Interagency Scientific Committee to address the conservation of the northern spotted owl. We are more than pleased to be a part of the effort aimed at conserving the northern spotted owl.

In August 1988 the National Park Service, along with the U.S. Fish and Wildlife Service, the Bureau of Land Management and the U.S. Forest Service, signed a four-party interagency agreement aimed at ensuring population viability for the spotted owl. The Service agreed to maintain natural habitat within the National Park System that ensures the continued existence of a well distributed population on those lands, respective of natural processes and including habitat which plays a role in preventing isolation of regional owl populations.

We also agreed to carry out habitat and owl inventories and monitoring sufficient to indicate long-term trends in habitats and owl populations throughout National Park System lands.

Management objectives for national parks are generally compatible with efforts designed to provide habitat for the northern spotted owl. While significant information gaps concerning spotted owl numbers and habitat exists for national parks, some surveys have been done and more are underway or planned. As an example, a six-person team is surveying the Elwha River drainage in Olympic National Park this field season.

In fiscal year 1992, we plan to begin a three-year, $900,000 detailed inventory of forests and their structural attributes in four Pacific Northwest national parks. This program would be funded within current budget levels as part of ongoing natural resource research efforts.

Spotted owls generally, but not exclusively, select forests with "old-growth" characteristics. An estimated 8 percent of this suitable owl habitat is found within national parks.

Unfortunately, while our management objectives and, indeed, management practices are compatible with the conservation of the spotted owl, it is also likely that parks do not provide sufficient land base in and of themselves to provide for the long-term survival of the spotted owl. We believe that State and private lands, as well as other Federal and tribal lands, have a definite role in the long-term survival of the northern spotted owls.

Connections between protected populations are essential, in our view. We are convinced that the persistence of owls inside the national parks depends heavily on the continued success of populations outside.

Thank you.

Senator BUMPERS. Thank you, Dr. Houston.

Dr. Thomas, I hope I can just sort of extemporaneously—incidentally, it is curious that opening statements took about twice as long as it did for five witnesses to testify. As my father use to say, you do not learn anything when you are doing the talking, but we do not seem to understand that around here.

How many habitat conservation areas do you recommend, and what is the total acreage of all of them?

Dr. THOMAS. I will have to look that up.

Senator BUMPERS. Staff advises me that the total acreage is 8.4 million, is that correct?

Dr. THOMAS. Approximately correct, yes, sir.

Senator BUMPERS. That is of Federal lands?

Mr. ROBERTSON. My numbers show, Mr. Chairman, about 8 million acres in total of which 5.3 is national forest.

Senator BUMPERS. Do you have a breakdown of the remaining 2.7?

Mr. JAMISON. I think Mr. Turner has it right in front of him right now.

Mr. TURNER. Mr. Chairman, I have it by bureau by State. Forest Service land in California—no, Mr. Chairman. These are not totals. I apologize. These are the suggested sizes of the HCAs.

Senator BUMPERS. Do we have any maps of this area, of the committee's recommendations, color-coded maps or something? I see this easel over here with these maps. Could we derive some benefit by seeing those?

Mr. JAMISON. Mr. Chairman, for the BLM, it is about 611,000 acres are contained in HCAs on BLM land, and that is just only in Oregon.

Senator BUMPERS. Let me just make this statement and ask you to comment on it. The information I have is that all lands, all ownerships, total 8.5 million acres. Of that amount, Forest Service withdrawn, that is wilderness and parks, is 3.4 million. Now, is it fair to say that that 3.4 million would not be harvested anyway, because it is wilderness and parks?

Mr. ROBERTSON. Yes.

Senator BUMPERS. Further, there is Forest Service withdrawn lands because of existing prohibitions against cutting, and soils, et cetera, and that is 430,000 acres. Then Forest Service, that is, suitable lands for harvesting and all other lands is 4.67 million acres. Forest Service suitable timber is 2.7. And all other lands, wherever that means—that includes private, state, BLM and United States Forest Service non-forest. In other words, I take it there are HCAs here that do not have forests on them. Is that correct, Dr. Thomas?

Dr. THOMAS. No. There are some of them that are partially non-forested.

Senator BUMPERS. That is listed at 1.97 million acres.

So, let us get back to the starting point here. We are talking about a total of 8.5 million. But I want to be sure the record is clear about how many of those acres would not be harvested under any circumstances if we had never heard of the spotted owl.

Mr. ROBERTSON. I can give you that, Mr. Chairman, for the Forest Service. Out of the 5.3 million acres on national forests, 2.3 million acres of that, or 43 percent of it, is in our commercial forest land base. So, that means there is 57 percent that would not be harvested in any event.

Senator **Bumpers**. Out of your share, 43 percent is harvestable and the remainder would not be harvestable under any circumstances?

Mr. **Robertson**. Well, it is wilderness or under existing land management plans.

Senator **Bumpers**. Just for curiosity, Dr. Houston, how many acres are in the Olympic National Park?

Dr. **Houston**. How many total acres?

Senator **Bumpers**. Yes.

Dr. **Houston**. 900,000.

Senator **Bumpers**. Is it all considered in one of the HCAs or not?

Dr. **Houston**. No, no. There is 900,000 total acres within the Olympic National Park and about 300,000 of that is considered to be owl habitat.

Senator **Bumpers**. Now, can anybody describe what this map is saying?

Mr. **Jamison**. Dr. Thomas can.

Dr. **Thomas**. The purple areas are HCAs. Can I walk up there?

Senator **Bumpers**. Yes, by all means do. You will have to speak louder when you do that. You have a relatively subdued voice I notice, Dr. Thomas.

Dr. **Thomas**. This is obviously the state of Oregon and we have two other maps for Washington and California. But the principles remain the same.

The purple areas are recommended for HCAs. Now, they are colored in purple so you can see them, but for example, that one is a checkerboard area on BLM land, so it is half private.

Now, let me make something very clear. The HCA strategy does not require any manipulation of private land. But you cannot draw a line around something that is a checkerboard. I would like to find the guy that invented checkerboards, by the way, but that is neither here nor there.

These are the HCAs. About, I believe, 42 percent of those lands in Oregon are in wilderness areas and parks. Obviously, we started to build our conservation strategy using parks and existing wildernesses to minimize the effect on the annual sale quality. So, that is the distribution.

The light green is Forest Service land. The tan is BLM land, and the white is private land. These areas up this way are on state land.

Now, to make a point, the state of Oregon lists this species as threatened. The state of Oregon lists this species as threatened. The state of Washington lists it as sensitive.

Senator **Bumpers**. Do both states preserve state-owned lands where a spotted owl has a habitat?

Dr. **Thomas**. No. There is case-by-case addressing of finding spotted owls. Very few of them are found here. There are very few owl between here and here.

Senator **Bumpers**. For the record, you are talking about from the northwestern corner of Oregon down to about the central part of Oregon on the coast?

Dr. THOMAS. Yes. If we want to make connection to the north to the Olympic peninsula it would require these HCAs. I do not think that we thought the political probability that those would become HCAs is very large. But the strategy would be much better in 100 years, if they were connected.

But anyway, the purple areas are the HCAs and that is the land-use distribution: state lands, BLM lands, primarily Forest Service and park land.

Senator BUMPERS. Now, Dr. Thomas, will the spotted owl fly or migrate between those HCAs?

Dr. THOMAS. Yes, sir.

Senator BUMPERS. In other words, they do not confine their habitat to just one of those purple areas?

Dr. THOMAS. No. This is where we would find the best habitat. We will find some owls in between.

Senator BUMPERS. That is in the western part of Oregon, west central?

Dr. THOMAS. Let me go through the good part first. We are in good shape here. We are in very poor shape here.

Senator HATFIELD. Mr. Chairman, would Dr. Thomas, just for a moment——

Dr. THOMAS. Yes, sir.

Senator HATFIELD. Let us identify the area, Dr. Thomas.

Dr. THOMAS. The Cascade Range, we have a considerable amount of options left and the owl is in pretty good shape. When we move to the north coast——

Senator HATFIELD. The coastal range.

Dr. THOMAS. The coast range of Oregon, and move down to the central part, we are in very poor condition here. There are probably less than 50 pair of owls extent here that we know of. Search would reveal a few more, but I do not think the population density would ever increase dramatically.

Senator HATFIELD. Mr. Chairman, Dr. Thomas, excuse me, but between those two arrangements, Senator, is the Willamette Valley, where the major population of the state is.

Dr. THOMAS. Excuse me. I will do a better job. I keep thinking everybody is——

Senator BUMPERS. Bear in mind, the record does not show us anything when you say right here and right there.

Dr. THOMAS. I will remember that. The connections are this way. There is a mountain range through the central portion of the state of Oregon. It is the Cascade Range. It provides habitat from one end to the other. Then we have a coast range that runs down the coast. It is separated by the Willamette Valley until we move into southern Oregon, and then there is a connection of forests across there. So, essentially within Oregon, the distribution looks like a U.

As I told you, the population is in good shape here, and we have many options left. When we move into the BLM lands, we have less options, primarily because of the checkerboard and the difference in the management prescribed for BLM lands versus Forest Service land.

And as we begin to move north, essentially because of past cutting practices and fires, as we move north in the coast range, we have very few owls.

But the idea is that we would maintain populations within these purple blocks called HCAs, of 20 or more pair in the long term. They should remain viable within those blocks for up to 50 years without immigration in or out. They are close enough together, 12 miles at their closest proximity. Based on radio-telemetry data, that we would expect exchange between these at least at the rate of one bird per generation. That is all that is required for genetic viability.

So, the whole strategy is built on 20-pair blocks where we can get them, arranged in an appropriate distribution to assure that we can get connection.

Senator BUMPERS. You talk about wishing there was not such a thing as checkerboard. You can take that up with Thomas Jefferson. He was the originator of that.

Are you telling me that those HCAs were determined primarily on the basis of 20 pairs?

Dr. THOMAS. No, sir. What we did to begin with, conservation biology indicated to us that clusters of pairs, combinations—you know, more than one pair together—gave us the best chance. When we went to the maps, and as you can see, there is a land ownership pattern. We tried to concentrate on Federal lands. There is past cutting history, there is past fire history, there is development of these areas.

And when we looked and said, what can we do in terms of clusters. We went through a number of mapping exercises, and we indicated that we could get clusters of about 20 pairs. So, we hypothesized that we knew that clusters were better from the biology of the situation.

We found from the maps we could get populations of about 20. We could get some much larger than that and some fewer. Then we tested that with the empirical biological data we could get from studies that had been done around the world, and then we backed that up with a model. We tested all of these things mathematically, feeding in information on the biology of the species. The model held up with the empirical data, and we could provide such HCAs. So, it was a test of the hypothesis, and we accepted it.

Senator BUMPERS. Are all those purple areas old-growth timber?

Dr. THOMAS. No, sir. In fact, of the ones that even—up the Cascade Range, they average about 50 percent in mature and old-growth forest. These here have old growth in them at all or very little. The anticipation is, if they are established, they will mature into useable spotted owl habitat starting within the next 50 years?

Senator BUMPERS. Well, is there a difference between the health or the viability of the owl in those areas and the viability of the owl in the old-growth areas?

Dr. THOMAS. Yes, sir.

Senator BUMPERS. They seem to be prospering in both areas?

Dr. THOMAS. No, sir.

Senator BUMPERS. Well, explain that and tell us why.

Dr. THOMAS. All right. They are located—spotted owls—we prefer to use the word suitable habitat, and the fact that we do find owls that are not in old growth. We began to find owls in some forest, with the exclusion of Northern California that is a different case, somewhere between about 80 years and 120 years, if they are remnant old-growth structures. But they find their best habitat in old growth.

We find most of the owls in mature and old-growth forest on the ratio, I believe, of about 9:1 versus younger forest.

Senator BUMPERS. Does the owl live in a tree? Or does it have a nest?

Dr. THOMAS. Yes, sir. It nests, and it depends on where you are within the range. For example, in the Olympic Peninsula, it nests primarily in cavities. Once you move over on the east side of Oregon and Washington, it is a platform nester that nests in old mistletoe clumps or on platforms that are formed in trees by litter fall. It builds a platform and lives there.

We even know of one or two this year that are in nest boxes that were established for that purpose. They may be in the top of a broken out large old doug fir. So, basically, they either nest in cavities or on platforms.

Senator BUMPERS. How often does the female nest?

Dr. THOMAS. They seem to be sporadic breeders in the fact that they are quite capable, we think, of nesting each year and being reproductive each year. But they seem to nest or reproduce in pulses. Our data indicates you may have two or three years where the nesting success is very low, and then there will be a year when it is quite high.

Senator BUMPERS. Are you talking about the hatch being greater?

Dr. THOMAS. Yes.

Senator BUMPERS. What did you find to be the low and the high hatch rate? I mean, how many chicks do they produce normally?

Dr. THOMAS. They lay from between one and four eggs, ordinarily two. And those years that they are not successful, there will be almost no reproductive success. In years where they are successful, it will range up to .8 to .9 young per pair.

Senator BUMPERS. Now, Dr. Thomas, I want to clarify this because I think it is very important. You said that we might expect a loss of up to 50 percent.

Dr. THOMAS. Yes, sir.

Senator BUMPERS. I want to get to Washington in just a moment, too.

I understood you to say that your plan takes into consideration the possible loss of up to 50 percent of the existing population, but that that would be it and the remainder would still make the owl viable. Was that a fair statement or not?

Dr. THOMAS. Yes. And our conclusion is, there are a number of owls that presently exist. The species is long lived; it lives up to 15 years, perhaps longer. As a result, you see what we are encountering, what you call lag effect, or what we call lag effect or biologists do. In that something that happens immediately does not produce an immediate result. The species is long lived, and it goes to the next best habitat.

But what we anticipate is a number of those birds that are already out there are in a non-viable state. They are not nesting. They are in living as singles, or living in inferior habitat and will eventually fade out of the picture.

So as we set up the HCA areas, we have a management strategy now that is called SOHA—spotted owl habitat areas, which are small patches of 1,000 acres to 2,000 acres of suitable habitat. As we set up the HCA strategy, we abandon the old strategy. And those owls that are in those areas and elsewhere outside of these HCAs are apt to be lost.

Senator BUMPERS. Are these owls nocturnal like other owls are?

Dr. THOMAS. Yes. But they also—because they feed under that old-growth forest canopy can be active in the daytime and are.

Senator BUMPERS. Are they subject to predators?

Dr. THOMAS. Yes.

Senator BUMPERS. What is the biggest predator?

Dr. THOMAS. We know that they are lost to goshawks and to great horned owls. I suspect those are the two best predators.

Senator BUMPERS. Is one of the reasons they are able to defend themselves or protect themselves against the horn-toed owl because of the canopy of an old-growth forest?

Dr. THOMAS. That is the theory. I know of no studies that would demonstrate that scientifically. I think it is logical that they are adapted to old-growth forest in a rather contiguous state. And they are relatively well-protected from predators there. In the areas where they fly across the open, it seems rational that they would be exposed to predators that work there, which are great horned owls and goshawks. But I do not know of any scientific data, except that they are taken by those two species.

Senator BUMPERS. I see you have got the Washington map. What is the other one? Northern California?

Dr. THOMAS. Yes, sir.

Senator BUMPERS. May I see that one also? What is the difference, incidentally, Chief Robertson, if you know, what is the acreage in each one of these states? Can you give us that? What is the state most heavily impacted so far as timber cuts are concerned? Is it Oregon?

Mr. ROBERTSON. Volume-wise it would be Oregon, percentage-wise it would be Washington. And that is due to a larger range. They range over a larger area in Washington.

Senator BUMPERS. Dr. Thomas, would you put the Northern California map up?

The Senators from Oregon and Washington have always been very active and deeply concerned about this. I have not heard from the California senators, and I am curious as to why. I should not have said that, I guess, should I?

Senator HATFIELD. Mr. Chairman, may I respond to that?

Senator BUMPERS. Yes.

Senator HATFIELD. First of all, the population is down in Los Angeles and San Francisco of that state—the major population. Secondly, I do have today questions from Governor Deukmejian who would like to have those questions submitted for the record, along with questions from Governor Goldschmidt of Oregon and Governor Gardner of Washington State, as well as Senator McClure, Senator Wallop, and Senator Gorton.

Senator BUMPERS. You can go ahead and sit down, if you want to, Dr. Thomas.

Now, Chief Robertson, I am looking at a chart here entitled, Economic Effects of Implementing a Conservation Strategy for the Northern Spotted Owl. Now we get right into the 25,000 jobs loss by 1995 if the recommendations of the Thomas Report are implemented.

And you also say in a footnote that these figures incorporate some job loss expected by moving from draft to final forest plans. Is that correct?

Mr. ROBERTSON. Yes. What we have here, the 25,000 job loss, is a combination of job losses due to reduced timber harvest based on our new forest plans, as well as superimposing this strategy on top of those plans.

Senator BUMPERS. Fine. Now what I wanted to do is ask you if you can separate the two and give me the job loss that is attributable to the implementation, if we do it, of the Thomas Report?

Mr. ROBERTSON. Okay. Out of the 25,000—and I am talking on Forest Service, BLM may have different figures—but 38 percent of the loss would be due to the forest plans and 62 percent would be due to the conservation strategy superimposed on those plans.

Now, I would like to point out that 38 percent reduction in existing forest plans or final forest plans includes quite a bit of spotted owl habitat reduction already in those spotted owl habitat areas.

Senator BUMPERS. That you had already taken under consideration in designing your plan?

Mr. ROBERTSON. Yes. In fact, our plans, existing management plans, have about a 380 million board foot reduction due to the existing spotted owl decision that we are now operating under.

Senator BUMPERS. Now, how many billion board feet, in the area we are talking about, does your plan anticipate that you would cut on an annual basis over the next 10 years? Do you know the answer to that?

Mr. ROBERTSON. What area? Oregon, Washington?

Senator BUMPERS. Well, let us just take them state by state. Let us take Oregon first, how many billion board feet, completely aside from the Thomas Report, would you anticipate harvesting in 1991? And, Senator Hatfield, correct me if I am wrong, we are still operating under your amendment to the 1990 appropriations bill?

Senator HATFIELD. We are, 3.85 billion board feet for Region 6.

Senator BUMPERS. That was done by Region 6.

Senator HATFIELD. It is done by Oregon and Washington together as one region. We appropriate on that basis. And that was down from forest plans of 5.2 billion board feet.

Senator BUMPERS. So your amendment allowed the reduction of roughly 2 billion?

Senator HATFIELD. Not all in one year. We dropped from about 4.3—was it not, Mr. Robertson—in 1989 down to 3.85. That was the final drop between 1989 and 1990 of the current fiscal year.

Senator BUMPERS. Chief Robertson, rather than my struggling around trying to pose this question, you understand that what I am trying to do here for the record is to establish the number of board feet that would not be cut in the State of Oregon as a result of the Thomas Report, and how that translates into jobs in the State of Oregon.

Mr. ROBERTSON. Okay, the reduction due to the Thomas Report in Oregon would be 486 million board feet.

Senator BUMPERS. On an annual basis?

Mr. ROBERTSON. On an annual basis.

Senator BUMPERS. Can you give me that same figure for Washington?

Mr. ROBERTSON. On Washington, it would be 333 million board feet for a total in Region 6 of 819 million board feet.

Senator HATFIELD. Mr. Chairman, could I interrupt here?

Senator BUMPERS. Yes.

Senator HATFIELD. That is from the implementation of the new plans. But let us take it from current fiscal year of 3.85 in Region 6 and break that down as to the impact. Because I think, Mr. Chairman, that gives us a better picture than taking it from the plans. Take it from the current level.

Mr. ROBERTSON. Let us talk about—maybe relate back to Senator Hatfield's 3.85—and let us talk about Oregon and Washington together which is our Region 6. We have, if you add up our existing draft forest plans and final forest plans—and we have got a combination some draft, some final—we have an allowable sale quantity of 4 billion board feet in Oregon and Washington.

If you look at where we believe we will come out on the final plans, we will drop to about 3.4 billion board feet to 3.5 billion board feet.

Senator BUMPERS. When?

Mr. ROBERTSON. Well, half of the plans are final now, and the other half are in draft. And we hope to have all of the plans done by the end of this calendar year. And then there would be another, if we implement the Thomas Report, there would be another reduction of 800 million, or .8, which would drop us down to about 2.6 to 2.7, if we fully implemented the Thomas Report, and it was implemented on top of existing plans.

So you are looking at about 2.6 billion board feet, 2.7 billion board feet, compared to this year's program of 3.85 billion board feet.

Senator BUMPERS. Now, Chief Robertson——

Senator HATFIELD. Which by the way, Mr. Chairman, we are not going to achieve—the 3.85 this year.

Senator BUMPERS. You are not going to be able to cut that much any way.

Senator HATFIELD. We are not going to be able to achieve that. Are we?

Senator BUMPERS. Chief Robertson, can you tell me, is there some rule of thumb that you translate board feet into jobs? So many board feet per job? Is that the way you arrive at the number of jobs lost?

Mr. ROBERTSON. Yes. I have Dr. Tom Hamilton who headed up our economic study here. It is 11 jobs per million board feet, and that is direct and indirect.

Senator BUMPERS. Now, does the Thomas Report take into consideration or does it discuss the impact of the loss of revenues from that timber on the school districts in total dollars?

Mr. ROBERTSON. Not the Thomas Report but the economic report that the BLM Forest Service did. And our estimate is—there is two scenarios here. As we reduce the supply of timber, we believe the price of that remaining timber will increase. So with a rising price scenario, the revenue loss to the government would be about $148 million a year.

If you assume a constant price, it would be $501 million reduction in revenue to the Federal Government. And then we share 25 percent of our receipts with the counties, BLM shares 50 percent, and that would translate to about $74 million reduction to counties under the rising price scenario or $172 million loss annually to the counties under a constant price.

Senator **BUMPERS**. In Region 6?

Mr. **ROBERTSON**. Well, that is in Oregon, Washington and Northern California.

Senator **BUMPERS**. Now, on this 11 jobs per million board feet, how does that compare with the number of jobs per million board feet, say, 10, 20 years ago?

Mr. **ROBERTSON**. It would be less.

Senator **BUMPERS**. Due to automation?

Mr. **ROBERTSON**. It is less. We do not know how much.

Senator **BUMPERS**. It would be less due to automation?

Mr. **ROBERTSON**. Yes. There has been considerable efficiencies in the timber industry in the last 10 years. A lot of mills are automating and reducing number of workers.

Senator **BUMPERS**. I am just about through. Senator Hatfield, I know you are anxious to get at this panel. And I have to leave, so I want to finish my questioning.

Dr. Thomas, at a recent House Joint Subcommittee hearing, Dr. Jerry Franklin, chief plant ecologist for the Forest Service in region six characterized your committee's report as a minimal risk plan and suggested experimentation with new forestry within some of the proposed HCAs might constitute an acceptable level of risk. Did you see that comment or hear that comment?

Dr. **THOMAS**. Yes, sir.

Senator **BUMPERS**. Do you have any comment to respond?

Dr. **THOMAS**. Yes, sir. I do not think our committee considers our plan a minimal risk plan. Any plan that would give up 50 percent of a population of a species in long-term decline is not a minimal risk plan. The minimal risk plan is a reservation or preservation of all habitat for all of those. So there has been a considerable compromise.

Dr. Franklin and I are in total agreement that new forestry or new perspectives in forestry gives us an opportunity to test whether we can harvest timber in old growth or enhance younger growth stands to accommodate spotted owls. That is the whole second-half of our strategy, hoping that that be done, and then we can move into the HCAs. But because of the strategy, we have already taken a considerable gamble.

We do not feel that experimentation within the HCAs is appropriate. There are great acreages of spotted owl habitat released outside of the HCAs where those experiments should take place.

Senator **BUMPERS**. Now is there any spotted owl any place else in the United States other than this area?

Dr. **THOMAS**. Yes, sir. The spotted owl is divided into three subspecies: the northern, the California, which is down the central part of California, then there is the Mexican subspecies that goes into Arizona and some into Utah. But it is a different subspecies.

Senator **BUMPERS**. Are any of them threatened? The other species?

Dr. **THOMAS**. Not at the present time. There are none of them that are—watch out, the word threatened has a legal meaning, and that is a listing decision. And I think we know much less about the California and Mexican subspecies than we know about the northern. It has not been a subject that people have been—I think we are going to become relatively interested in it pretty quickly, but not now.

Senator **BUMPERS**. Do you have an educated guess as to how many spotted owl there are?

Dr. **THOMAS**. Yes, sir. We know I think of 2,000 identified pairs of northern spotted owls. That is certainly not all of them. I think the number probably ranges somewhere between 2,000 pairs and 6,000 pairs.

Senator **BUMPERS**. 2,000 pairs and 6,000 pairs? That is a pretty wide range. Is it not?

Dr. **THOMAS**. No, sir. That is a very narrow range.

Senator **BUMPERS**. Is it?

Dr. **THOMAS**. Well, yes, sir. When you are talking about—you said do you know how much there are. I know we have got 2,000 identified pairs. I know that there are—we know there are more pairs than that, perhaps as many as twice to three times as many. I suspect there may be 4,000 pairs or 5,000 pairs.

Senator **BUMPERS**. Well, so what you are saying is that the owl would still be viable with 1,000 pairs to 3,000 pairs?

Dr. **THOMAS**. No, sir. I am saying that the number probably is not nearly as important as the arrangement of the habitat and how the habitat is put together. If it exists, for example, across its entire range, it is in much more viable condition than it is if it is isolated within a portion of the range. It is in much better shape if it is in HCAs that had 50 pairs in them than it is within 20.

So the things all fit together, the distribution, the sizing of the clusters and the distribution between the clusters and the habitat condition within and between. There is not a magic number.

Senator **BUMPERS**. If the owl is listed, is your plan a suitable recovery plan?

Dr. **THOMAS**. That is not for me to say. That is for Mr. Turner and his associates.

Senator **BUMPERS**. Well, Mr. Turner, is it?

Mr. **TURNER**. Mr. Chairman, we are required by law if the owl is listed to consider a recovery plan and establish that over the coming year. We are required by law to take that to the public, public hearings and so forth. So for us to prejudge what may or may not be an adequate recovery plan, it is my personal opinion——

Senator **BUMPERS**. Are you telling me if you list it we got all this to go through all over again?

Mr. **TURNER**. It is my personal opinion that the Thomas Report should be and would be the basis for a recovery plan, at least, the findings, the objectives and the goals.

Senator **Bumpers**. Has the Bureau of Land Management or the Forest Service, either one, begun any plans to implement the Thomas Report?

Mr. **Jamison**. No, sir. In fact, I am trying to come up and see if there are not some other options for the Thomas Report. Because in BLM we are highly impacted, up to 62 percent. It affects basically one State, Oregon. And we feel that because of our fractured land ownership pattern, it really compounds the problems on BLM.

And so I think as good managers we have to go back and look and see if there is not another alternative. And we are doing that.

Senator **Bumpers**. Chief Robertson.

Senator **Adams**. Mr. Chairman, would you submit my questions for the record, please?

Senator **Hatfield**. Mr. Chairman, would you yield for a moment?

Senator **Bumpers**. I will tell you what I am going to do, I have got some more questions I will submit for the record.

And I am going to have to go ahead and leave right now. And I am going to turn you gentlemen over to the tender mercies of the Senator from Oregon. You said you only had two hours worth of questions, so commence.

Senator **Hatfield**. Mr. Chairman, before you leave, you put your finger on a very important item here. You can imagine with the data that we have thus far developed, the economic analysis—and by the way I would like for the record to have the two states, one for Washington State and one for Oregon, preliminary analysis of economic impact that have been made by two state governments.

Senator **Bumpers**. Would you like to submit those for the record?

Senator **Hatfield**. I would. And also the Beuter report from Oregon State University which has—it is the Beuter II Report. They have had a previous one, but this one also has some very excellent data. But you can understand the concerns of people in my state, and I am sure throughout the region, not so much the question of these initial impact statements, or the scientific data which has been advisory, but the fact that the process, Mr. Chairman, the process that will be triggered under the Endangered Species Act could go on and on and on and on.

And indeterminable in terms of court involvements or other actions or public participation, all of which we want to protect. But nevertheless, it is an uncertainty, the unpredictability that has really been wreaking more havoc than if we went right ahead right now and legislated all this so-called withdrawal. I am making an exaggerated here to illustrate a point.

You could trade-off, knowing exactly what the timber base is, if you enacted this immediately. But the process that is going to be further ahead of us is going to create even a greater economic—I feel, a greater economic uncertainty and problem for us down the road. So I am glad you are chairman at this point.

[The information referred to follows:]

Executive Summary of the Employment Impact of Timber Harvest Variation in Washington State

In 1989, the timber harvest from Washington forests was estimated to be between 7.1 and 7.4 billion board/feet, of which 2.8 bbf were exported.

Average employment in the lumber and wood products industry was 42,450 (41,100 nonagricultural + 1,350 sole proprietors).

Based on these harvest and employment figures, each million board/feet of harvest represents:

- 1.6 logging jobs and 6.6 lumber processing (mill) jobs.
- $268,058 in direct wages and benefits ($24,230 in wages and $8,460 in benefits per worker).
- 16 indirect jobs (jobs multiplier of 2.95*).
- $396,725 in indirect wages and benefits (income multiplier of 2.48*).

Though the great majority of old-growth timber is on federal and state lands, private tracts of old-growth also exist. As a result, Federal, State and private timber could be affected by closures.

The Interagency Scientific Commission proposed a reduced level of harvest on USFS lands. In 1989 an estimated 1,288.6 million board/feet of timber was cut from USFS lands in Washington. The proposed level would be 542.4 million board/feet, a decline of 57.8 percent relative to the 1989 harvest level.

A decline of this magnitude could result in a loss of:

- 1,190 logging and 4,910 milling jobs (6,100 total).
- $199,490,000 in direct wages and benefits.
- 11,900 indirect jobs.
- $295,240,000 in indirect wages and benefits.

Note: These figures are based on nonagricultural wage and salary jobs and estimates of sole proprietors or self-employed individuals. Because of the higher rural concentration of self-employed lumber and wood products workers, it should be recognized that this analysis could underestimate the total economic impact of any harvest decline.

* *From the Washington Input-Output Study for 1982, Professor Philip J. Borque, University of Washington.*

LMEA 05/04/90

ESTIMATED FEDERAL HARVEST AND
LUMBER AND WOOD PRODUCTS EMPLOYMENT BY COUNTY

	1989 Harvest	Est. Empl. 1989	Current Harvest Plan	Est. Empl. Current Plan	ISC Harvest Plan	Est. Empl. ISC Plan	Total Loss ISC Plan	Share Of Total Loss
Adams	0	0	0	0	0	0	0	0.0%
Asotin	3,465	28	2,872	24	3,598	29	1	0.0%
Benton	0	0	0	0	0	0	0	0.0%
Chelan	36,198	297	30,008	246	15,822	130	(167)	2.7%
Clallam	95,277	781	78,963	647	21,893	180	(602)	9.9%
Clark	46,869	384	38,844	319	20,679	170	(215)	3.5%
Columbia *	0	0	0	0	0	0	0	0.0%
Cowlitz	89,582	735	74,243	609	39,512	324	(411)	6.7%
Douglas *	0	0	0	0	0	0	0	0.0%
Ferry *	16,068	132	13,317	109	12,929	106	(26)	0.4%
Franklin *	0	0	0	0	0	0	0	0.0%
Garfield	0	0	0	0	0	0	0	0.0%
Grant	0	0	0	0	0	0	0	0.0%
Grays-Harbor	97,281	798	80,624	661	26,411	217	(581)	9.5%
Island	0	0	0	0	0	0	0	0.0%
Jefferson	441	4	365	3	101	1	(3)	0.0%
King	34,204	280	28,347	232	10,229	84	(197)	3.2%
Kitsap	7,704	63	6,385	52	1,768	14	(49)	0.8%
Kittitas	6,003	49	4,975	41	2,624	22	(28)	0.5%
Klickitat	73,052	599	60,543	496	32,212	264	(335)	5.5%
Lewis	120,228	986	99,642	817	52,404	430	(556)	9.1%
Lincoln *	0	0	0	0	0	0	0	0.0%
Mason	26,965	221	22,348	183	6,199	51	(170)	2.8%
Okanogan	116,265	953	96,358	790	62,551	513	(441)	7.2%
Pacific	1,989	16	1,648	14	814	7	(10)	0.2%
Pend Oreille	17,548	144	14,543	119	15,468	127	(17)	0.3%
Pierce	94,869	778	78,625	645	28,429	233	(545)	8.9%
San Juan	0	0	0	0	0	0	0	0.0%
Skagit	20,915	172	17,334	142	5,699	47	(125)	2.0%
Skamania	80,217	658	66,481	545	35,396	290	(368)	6.0%
Snohomish	148,124	1,215	122,761	1,007	47,110	386	(828)	13.6%
Spokane	1,382	11	1,146	9	1,219	10	(1)	0.0%
Stevens	82,264	675	68,178	559	71,410	586	(89)	1.5%
Thurston	25,636	210	21,247	174	9,270	76	(134)	2.2%
Wahkiakum	0	0	0	0	0	0	0	0.0%
Walla Walla *	3,063	25	2,539	21	3,180	26	1	0.0%
Whatcom	12,769	105	10,583	87	3,155	26	(79)	1.3%
Whitman *	0	0	0	0	0	0	0	0.0%
Yakima	28,222	231	23,390	192	12,339	101	(130)	2.1%
State Total	1,286,400	10,550	1,066,300	8,744	542,400	4,448	(6,102)	100.0%

Harvest figures in thousands of board/feet.

Source: Employment Security Department

LMEA 05/04/90

FEDERAL TIMBER HARVEST AND LUMBER & WOOD PRODUCTS EMPLOYMENT AND WAGES 1989, CURRENT, AND INTERAGENCY SCIENTIFIC COMMISSION PLANS

	1989	Current Harvest Plans	USFS ISC PLAN	Loss Based on USFS/IS PLAN	Percent Decline
HARVEST [1]					
Gifford Pinchot	444.3	388.0	189.0	(255.3)	-57.5%
Wenatchee	197.1	136.0	83.0	(114.1)	-57.9%
Olympic	194.4	185.6	43.0	(151.4)	-77.9%
Mt. Baker-Snoqualmie	188.7	170.0	45.0	(143.7)	-76.2%
Colville	145.3	123.4	123.4	(21.9)	-15.1%
Okanogan	116.8	63.3	59.0	(57.8)	-49.5%
Total	1,286.6	1,066.3	542.4	(744.2)	-57.8%
EMPLOYMENT					
Gifford Pinchot	3,640	3,180	1,550	(2,090)	-57.4%
Wenatchee	1,620	1,120	680	(940)	-58.0%
Olympic	1,590	1,520	350	(1,240)	-78.0%
Mt. Baker-Snoqualmie	1,550	1,390	370	(1,180)	-76.1%
Colville	1,190	1,010	1,010	(180)	-15.1%
Okanogan	960	520	480	(480)	-50.0%
Total	10,550	8,740	4,440	(6,110)	-57.9%
WAGES AND BENEFITS					
Gifford Pinchot	$118,992	$103,954	$50,670	($68,322)	-57.4%
Wenatchee	$52,958	$36,613	$22,229	($30,729)	-58.0%
Olympic	$51,977	$49,689	$11,442	($40,536)	-78.0%
Mt. Baker-Snoqualmie	$50,670	$45,439	$12,095	($38,574)	-76.1%
Colville	$38,901	$33,017	$33,017	($5,884)	-15.1%
Okanogan	$31,382	$16,999	$15,691	($15,691)	-50.0%
Total	$344,880	$285,711	$145,144	($199,736)	-57.9%

[1] Harvest in millions of board/feet.
[2] Income in thousands.

Source: US Forest Service and Employment Security

LMEA 09/14/90

ESTIMATED LABOR FORCE IMPACT BY COUNTY
RELATED TO DECLINES IN THE FEDERAL TIMBER HARVEST

	Workers At Risk Under IBC Plan	1989 Labor Force			Direct Only		2.0 Mult.		2.4 Mult.		2.95 Mult.	
		Empl.	Unemp.	Rate	Unemp.	Rate	Unemp.	Rate	Unemp.	Rate	Unemp.	Rate
Adams	0	6,070	830	12.0%	830	12.0%	830	12.0%	830	12.0%	830	12.0%
Asotin	1	8,780	470	5.1%	469	5.1%	468	5.1%	467	5.1%	467	5.0%
Benton	0	51,300	4,300	7.7%	4,300	7.7%	4,300	7.7%	4,300	7.7%	4,300	7.7%
Chelan	(167)	24,610	2,900	10.5%	3,067	11.1%	3,234	11.8%	3,301	12.0%	3,395	12.3%
Clallam	(402)	22,450	2,080	8.5%	2,482	10.9%	3,284	13.4%	3,524	14.4%	3,833	15.7%
Clark	(215)	115,700	7,200	5.9%	7,415	6.0%	7,630	6.2%	7,715	6.3%	7,834	6.4%
Columbia *	0	1,680	260	13.4%	260	13.4%	260	13.4%	260	13.4%	260	13.4%
Cowlitz	(411)	34,960	3,130	8.2%	3,541	9.3%	3,951	10.4%	4,115	10.8%	4,341	11.4%
Douglas *	0	12,310	1,200	8.8%	1,200	8.8%	1,200	8.8%	1,200	8.8%	1,200	8.8%
Ferry *	(26)	2,830	370	11.6%	396	12.4%	421	13.2%	432	13.5%	446	13.9%
Franklin *	0	14,200	1,900	11.8%	1,900	11.8%	1,900	11.8%	1,900	11.8%	1,900	11.8%
Garfield	0	1,030	50	4.6%	50	4.6%	50	4.6%	50	4.6%	50	4.6%
Grant	0	23,840	2,640	10.0%	2,640	10.0%	2,640	10.0%	2,640	10.0%	2,640	10.0%
Grays Harbor	(581)	24,480	2,800	10.3%	3,381	12.4%	3,962	14.5%	4,195	15.4%	4,514	16.6%
Island	0	20,160	970	4.6%	970	4.6%	970	4.6%	970	4.6%	970	4.6%
Jefferson	(3)	8,180	490	5.7%	493	5.7%	496	5.7%	497	5.7%	498	5.8%
King	(197)	831,300	39,300	4.5%	39,497	4.5%	39,693	4.6%	39,772	4.6%	39,880	4.6%
Kitsap	(49)	75,300	4,300	5.4%	4,349	5.5%	4,397	5.5%	4,417	5.5%	4,444	5.6%
Kittitas	(28)	11,070	1,080	8.9%	1,108	9.1%	1,135	9.3%	1,147	9.4%	1,162	9.6%
Klickitat	(335)	7,180	1,090	13.3%	1,425	17.4%	1,760	21.4%	1,894	23.1%	2,078	25.3%
Lewis	(556)	23,550	2,290	8.9%	2,846	11.0%	3,402	13.2%	3,625	14.0%	3,931	15.2%
Lincoln *	0	4,180	210	4.8%	210	4.8%	210	4.8%	210	4.8%	210	4.8%
Mason	(170)	12,720	1,040	7.6%	1,210	8.8%	1,381	10.0%	1,449	10.5%	1,542	11.2%
Okanogan	(441)	14,940	2,030	12.0%	2,471	14.6%	2,911	17.2%	3,087	18.2%	3,330	19.6%
Pacific	(10)	6,780	730	9.7%	740	9.8%	749	10.0%	753	10.0%	758	10.1%
Pend Oreille	(17)	4,030	460	10.2%	477	10.6%	494	11.0%	501	11.2%	510	11.4%
Pierce	(345)	238,900	16,000	6.3%	16,345	6.5%	17,090	6.7%	17,308	6.8%	17,607	7.0%
San Juan	0	5,480	230	4.0%	230	4.0%	230	4.0%	230	4.0%	230	4.0%
Skagit	(125)	34,360	3,130	8.4%	3,255	8.7%	3,380	9.0%	3,429	9.2%	3,498	9.4%
Skamania	(366)	1,860	430	18.8%	796	34.8%	1,165	50.9%	1,312	57.3%	1,514	66.1%
Snohomish	(828)	220,900	11,300	4.9%	12,128	5.2%	12,957	5.6%	13,288	5.7%	13,744	5.9%
Spokane	(1)	159,700	11,100	6.5%	11,101	6.5%	11,103	6.5%	11,103	6.5%	11,104	6.5%
Stevens	(89)	11,070	1,130	9.3%	1,219	10.0%	1,308	10.7%	1,344	11.0%	1,393	11.4%
Thurston	(134)	75,000	5,000	6.3%	5,134	6.4%	5,268	6.6%	5,322	6.7%	5,396	6.7%
Wahkiakum	0	1,230	100	7.5%	100	7.5%	100	7.5%	100	7.5%	100	7.5%
Walla Walla *	1	22,830	1,740	7.1%	1,739	7.1%	1,738	7.1%	1,738	7.1%	1,737	7.1%
Whatcom	(79)	60,800	4,300	6.6%	4,379	6.7%	4,458	6.8%	4,489	6.9%	4,533	7.0%
Whitman *	0	18,820	520	2.7%	520	2.7%	520	2.7%	520	2.7%	520	2.7%
Yakima	(130)	87,600	11,800	11.9%	11,930	12.0%	12,060	12.1%	12,113	12.2%	12,184	12.3%
State Total	(6,102)	2,300,000	151,000	6.2%	157,102	6.4%	163,205	6.7%	165,644	6.8%	169,002	6.9%

Harvest figures in thousands of board/feet.
Source: Employment Security Department

LMEA 03/14/90

LUMBER AND WOOD PRODUCTS PROFILE
NUMBER AND SHARE OF WORKERS BY OCCUPATION
OES SURVEY AVERAGE 1980, 1983 AND 1986

	EMPLOYMENT			PERCENT		
	1980	1983	1986	1980	1983	1986
LOGGING CAMPS AND CONTRACTORS (SIC 241)	14,399	11,817	9,613	100.0%	100.0%	100.0%
Managerial and Administrative	1,066	260	221	7.4%	2.2%	2.3%
Professional, Paraprofessional and Technical	504	154	138	3.5%	1.3%	1.4%
Sales and Related	14	18	38	0.1%	0.1%	0.4%
Clerical and Administrative Support	634	414	394	4.4%	3.5%	4.1%
Service Occupations	72	83	48	0.5%	0.7%	0.5%
Agriculture, Forestry, Fishing and Production	12,110	10,895	8,777	84.1%	92.2%	91.3%
SAWMILLS AND PLANING MILLS (SIC 242)	18,758	17,345	15,216	100.0%	100.0%	100.0%
Managerial and Administrative	2,213	954	1,248	11.8%	5.5%	8.2%
Professional, Paraprofessional and Technical	394	1,787	1,704	2.1%	10.3%	11.2%
Sales and Related	75	191	198	0.4%	1.1%	1.3%
Clerical and Administrative Support	1,538	1,440	1,400	8.2%	8.3%	9.2%
Service Occupations	394	330	213	2.1%	1.9%	1.4%
Agriculture, Forestry, Fishing and Production	14,144	12,645	10,453	75.4%	72.9%	68.7%
MILLWORK, PLYWOOD AND STRUCTURAL MEMBERS (SIC	10,480	9,723	9,894	100.0%	100.0%	100.0%
Managerial and Administrative	534	428	396	5.1%	4.4%	4.0%
Professional, Paraprofessional and Technical	252	233	218	2.4%	2.4%	2.2%
Sales and Related	252	311	198	2.4%	3.2%	2.0%
Clerical and Administrative Support	608	574	514	5.8%	5.9%	5.2%
Service Occupations	168	146	79	1.6%	1.5%	0.8%
Agriculture, Forestry, Fishing and Production	8,667	8,031	8,489	82.7%	82.6%	85.8%
WOOD CONTAINERS (SIC 244)	754	696	583	100.0%	100.0%	100.0%
Managerial and Administrative	43	23	33	5.7%	3.3%	5.6%
Professional, Paraprofessional and Technical	5	8	5	0.6%	1.2%	0.8%
Sales and Related	10	23	16	1.3%	3.3%	2.8%
Clerical and Administrative Support	40	46	36	5.3%	6.6%	6.1%
Service Occupations	12	17	6	1.6%	2.5%	1.0%
Agriculture, Forestry, Fishing and Production	643	578	488	85.3%	83.1%	83.7%
WOOD BUILDINGS AND MOBILE HOMES (SIC 245)	1,396	902	874	100.0%	100.0%	100.0%
Managerial and Administrative	91	57	37	6.5%	6.3%	4.2%
Professional, Paraprofessional and Technical	60	30	39	4.3%	3.3%	4.5%
Sales and Related	63	31	30	4.5%	3.4%	3.4%
Clerical and Administrative Support	105	124	78	7.5%	13.7%	8.9%
Service Occupations	18	7	3	1.3%	0.8%	0.4%
Agriculture, Forestry, Fishing and Production	1,060	654	687	75.9%	72.5%	78.6%
MISCELLANEOUS WOOD PRODUCTS (SIC 249)	1,229	1,288	1,516	100.0%	100.0%	100.0%
Managerial and Administrative	120	86	129	9.8%	6.7%	8.5%
Professional, Paraprofessional and Technical	23	31	27	1.9%	2.4%	1.8%
Sales and Related	21	49	42	1.7%	3.8%	2.8%
Clerical and Administrative Support	113	128	151	9.2%	9.9%	10.0%
Service Occupations	34	14	23	2.8%	1.1%	1.5%
Agriculture, Forestry, Fishing and Production	917	980	1,145	74.6%	76.1%	75.4%
TOTAL LUMBER AND WOOD PRODUCTS (SIC 24)	47,016	41,771	37,692	100.0%	100.0%	100.0%
Managerial and Administrative	4,068	1,808	2,062	8.7%	4.3%	5.5%
Professional, Paraprofessional and Technical	1,237	2,243	2,127	2.6%	5.4%	5.6%
Sales and Related	434	616	523	0.9%	1.5%	1.4%
Clerical and Administrative Support	3,037	2,724	2,573	6.5%	6.5%	6.8%
Service Occupations	698	597	373	1.5%	1.4%	1.0%
Agriculture, Forestry, Fishing and Production	37,541	33,783	30,034	79.8%	80.9%	79.7%

SOURCE: Employment Security Department

State of Oregon Preliminary Analysis

# of the

Interagency Scientific Committee's Conservation Strategy for the Protection of the Spotted Owl

Governor Neil Goldschmidt
April 30, 1990

NEWS RELEASE

NEIL GOLDSCHMIDT
GOVERNOR

Contact: Gregg Kantor
378-3121

Brian Graber, OSU
737-1499 or
753-8226

April 30, 1990
FOR IMMEDIATE RELEASE

Gov. Neil Goldschmidt today released a draft analysis of the impacts of the proposed federal conservation strategy for the protection of the Spotted Owl. The protection strategy was included in the Jack Ward Thomas report released April 4, 1990.

The draft analysis was prepared by the state's Federal Forest Planning Team and was sent today to Oregon's congressional delegation.

The draft analysis estimates that the federal spotted owl conservation strategy included in the Thomas report could reduce public timber harvest levels by 995 to 1,205 million board feet (MMBFO). This is about 13 to 15 percent lower than the 1983 to 1987 average statewide harvest of 8,020 MMBF from all forest lands.

The draft analysis projected that a timber harvest reduction of this magnitude could result in a loss of 6,400 timber industry jobs, plus an additional 9,000 jobs in support sectors. The study estimates that wage and salary income losses from the conservation strategy could be $610 million

(more)

The Federal Forest Planning Team based their estimates on information contained in the economic analysis conducted by the Oregon State University College of Forestry in their report entitled "Timber for Oregon's Tomorrow -- The 1989 Update."

"Obviously, the implications of our early findings are serious for many Oregon communities, particularly when compounded by the reductions in timber available from federal lands as a result of new forest plans," Goldschmidt said in a cover letter to Oregon's congressional delegation.

Goldschmidt also announced that he has asked OSU's College of Forestry to conduct a more in depth study of the socio-economic implications of the Thomas report by June 15, 1990. This information will supplement additional analysis by the state's natural resource agencies, the Governor's Office and the Forest Planning Team on the proposed conservation strategy.

The State is taking comments on the preliminary analysis released today. Comments should be directed to Gail Achterman, Natural Resource Assistant to the Governor, Capitol, Salem, Oregon 97310.

-30-

DRAFT

State of Oregon
Preliminary Analysis of the Interagency Scientific Committee's Conservation Strategy for the Protection of the Spotted Owl
April 30, 1990

The State of Oregon has actively participated in federal forest planning because of the importance of these lands to our State. It is essential that the implications of the Interagency Scientific Committee's report be understood. The State of Oregon has prepared this preliminary analysis of the impact of the conservation strategy on timber harvests and the economy.

Included in this information package are:

- Estimates of impacts on the harvest of federal and State timber;
- Estimates of the economic effects;
- A map of the Habitat Conservation Areas (HCA's) that would be set aside for the protection of the spotted owl in Oregon; and
- A summary of the report prepared by the Interagency Scientific Committee

The State is taking additional steps to understand fully the implications of implementing the recommendations of the Interagency Scientific Committee and potential mitigation actions:

- The Governor's Federal Forest Planning Team is reviewing and reevaluating the preparation of State alternatives for each national forest plan to determine how it can best help frame issues and define the options facing Oregonians in light of the report.
- The Oregon Department of Forestry and the Division of State Lands are evaluating the applicability of the recommendations to State lands given trust obligations to local counties and the Common School Fund.
- The Oregon Department of Forestry and the Oregon Department of Fish and Wildlife are evaluating potential impacts on State and private forest lands in Oregon under the State and federal endangered species acts and the State Forest Practices Act.
- The Governor's Office is working with the Oregon Department of Forestry to review available options for restricting log exports under current Oregon laws and under the federal Export Administration Act.
- The Governor's Forest Planning Team will work with the Economic Development Department's Community Initiatives program to identify ways to mitigate the impact of the report's recommendations, if adopted.

The State will carefully review all these issues and will work closely with our Congressional delegation to review legislation or other actions that may be proposed.

Background on the Interagency Scientific Committee Report

On April 4, 1990, Jack Ward Thomas, acting on behalf of the Interagency Scientific Committee, released a recommended conservation strategy for the protection of the spotted owl. The Committee consisted of scientists from the USDI National Park Service, USDA Forest Service, USDI Bureau of Land Management, and the USDI Fish and Wildlife Service. The executive summary of that report is attached to this analysis along with a map of the proposed Habitat Conservation Areas (HCA's) in Oregon.

This strategy has not been adopted as the recovery plan for the northern spotted owl under the federal Endangered Species Act. The USDI Fish and Wildlife Service is scheduled to release its finding on whether or not the spotted owl should be listed as a threatened or endangered species on June 23, 1990. The Committee's report is significant, however, since it might be adopted as the recovery plan for the owl if the owl is listed as threatened or endangered. In addition, the strategy could be adopted by the USDA Forest Service to satisfy objectives of the National Forest Management Act (NFMA) even if the owl is not listed.

The Committee concluded that the owl is imperiled over significant portions of its range because of continuing losses of habitat. The Committee rejected the current Spotted Owl Habitat Area (SOHA) system as inadequate to meet the objective of assuring a viable population of owls widely distributed throughout their current range for at least 100 years.

Instead, the Committee proposed a conservation strategy that is based on a system of immediate habitat protection measures combined with a long-term research and monitoring program.

The Committee's goals in developing the strategy were to:

"Maintain, over the forest landscape, a population of northern spotted owls that has a high probability of continued existence throughout its range [and to] identify and protect, in the short-term, key habitat areas and pairs of owls."

Within the Committee's planning period of 50 to 100 years, they wanted to meet the following objectives:

- "Manage for continued distribution of breeding pairs throughout the owl's current range;
- Manage for restoration of breeding pairs in key areas of the owls' historic range;
- Manage habitat and owl distribution so that pairs and sub-populations of owls interact genetically and demographically, to minimize risks to long-term viability; and
- Monitor and conduct research to evaluate whether their goals and objectives are being met and to help in the management of the owl."

The proposed habitat conservation strategy involves setting up a system of 50 large areas in western Oregon as habitat conservation areas (HCA's) with approximately half of the HCA's on national forest land. Each HCA would be capable of supporting 10 to 20 pairs of owls. The HCA's range in size from 8,000 acres to 136,000 acres. In total, about 3.2 million acres are within the HCA's. No timber harvesting would be allowed in the HCA's. This includes some private lands intermingled with public lands. Timber harvesting would not be prohibited on private lands, but the Interagency Scientific Committee encouraged private landowners to participate in the plan.

The Committee also concluded that it was critical to protect "a general forest landscape between the HCA's amenable to dispersal by juvenile owls." Continuation of land allocations needed to do this appear to be based on the underlying land allocations in the new proposed federal forest plans including riparian corridors, scenic areas, unsuitable timber land, etc. This could limit the ability of federal or Sta[illegible] agencies to reallocate lands outside the HCA's in order to offset the impact of the HCA's t[illegible]ves.

The Committee also recommended that additional protection be given to habitat outside of the HCA's in certain sensitive areas for all known nests and future owls. The areas most affected by this include the Deschutes National Forest (south of Bend), Siuslaw National Forest, and the Eugene and Salem BLM Districts (north of Highway 38, west of I-5). In these areas, an area of suitable habitat would be delineated using a circle of a 1.5 mile radius around known nest sites. Outside the HCA's the committee recommended that at least 50 percent of the forest landbase should be maintained in stands of timber with an average dbh of 11 inches or greater and at least 40 percent canopy closure, (sometimes called the "50-11-40 rule"). Further, in areas aside from these and where there are known pairs of owls, the Committee recommends "at least 80 acres of suitable owl habitat around activity centers of all known owl pairs in managed forest up to seven per township."

Impact on Timber Harvesting

The State has made a preliminary analysis of the potential impact on timber harvest levels of public lands in Oregon due to the recommendations for forest management in the Committee's report. The overall impact on public timber harvest levels is estimated at around 995 to 1,205 million board feet (MMBF). This is about 13-15 percent lower than the 1983-1987 average statewide harvest of 8,020 MMBF from all forest lands. The State did not make estimates of possible impacts on private land timber harvest.

Overall Reduction of Public Timber Harvests in Oregon
If the Spotted Owl Conservation Plan is Implemented

(Million Board Feet/Year)
(Long Log) 10

National Forests		500-400	9-1.2
Bureau of Land Management	1,000	450-550	
State of Oregon		45-55	
Total		995-1205 MMBF/Year	1395 -> 1805
Percent of Oregon's total Harvest	14	13-15%	19530 25,270

National Forests

On national forests, the reduction of 500-600 MMBF is almost entirely on westside forests. This reduction is about 30-35 percent of the Forest Service's preferred alternatives/final plans for these forests as the State understands them. The Willamette and the Siuslaw National Forests face the biggest reductions.

Bureau of Land Management

On BLM lands, sales could fall by 450-550 MMBF from the current plans or a 45-55 percent reduction. The largest reductions could be on the Salem (West), Coos Bay, Roseburg and Eugene Districts. BLM impacts were the most difficult to estimate among the three ownerships because their harvest levels will be especially sensitive to the Committee's recommendations for timber management outside the HCA's.

State Lands

On State lands, the reduction could amount to about 45-55 MMBF affecting primarily the North Coast and Willamette regions. This could be a 19-23 percent reduction from current plans. The areas represent 19 percent of the total State-owned land and 23 percent of the Board of Forestry lands. Over the next ten years harvest reductions could be slightly larger, because the timber in the HCA's is closer to maturity than the average State forest inventory. Long run impacts on State lands could be more than double those reported here.

Five HCA's affect State lands:

- Northeast Clatsop County (Astoria District)
- Near the intersection of Tillamook, Clatsop and Washington Counties. Lands in these three counties plus a minor acreage in Columbia County are included (Forest Grove District)
- Kilchis drainage of Tillamook County (Tillamook District)
- Southwest Polk County/northwest Benton County with a small acreage of Lincoln County (West Oregon District)
- Southern Clackamas County (Santiam Unit)

Impacts on Clatsop, Tillamook, Washington, Polk, Clackamas, and Benton counties could be major. Columbia and Lincoln counties could experience minor impacts. Impacts on the Common School Fund could be minor. However, implementation of the complete strategy could be significant because of spotted owl sites on Common School lands in the Elliott State Forest.

Significant portions of these areas were reforested with rehabilitation bonds that were subsequently repaid by the State. The State paid these bonds expecting that counties would reimburse the State from revenues generated from future timber sales on the reforested sites covered by the bonding program. If the sites are not harvested, repayment to the State could be delayed.

While the State is concerned about the value of the timber lost, there are other important considerations related to: (1) the continued fixed costs of fire protection assessments, road maintenance and general forest administration, (2) maintenance of research sites and tree improvement outplantings, (3) management of other resource values such as big game habitat and recreation sites, and (4) long-term agreements for easements, rights-of-way and administrative sites.

Economic Impact

An economic analysis of 1100 million board feet per year reduction in Western Oregon's timber harvest was detailed in Oregon State University, College of Forestry's "Timber for Oregon's Tomorrow-The 1989 Update"(John Sessions, Norman Johnson, John Beuter, Brian Greber, and Gary Lettman, May, 1990. "Timber for Oregon's Tomorrow: The 1989 Update", Forest Research Lab, College of Forestry, Oregon State University. Dr. Greber prepared the economic impact section of the report.) This reduction approximates the midpoint of the State's preliminary estimate of the potential impact of the Committee's report on public timber supply in Oregon.

According to the Oregon State University study, 6,400 timber industry jobs could be lost plus an additional 9,000 jobs in supporting sectors for a total of 15,400 jobs lost due to a 1100 million board foot reduction. The study estimated that wage and salary income losses could be $610 million per year.

These results come from an econometric simulation of Oregon's entire economy. The simulation considers both the reemployment of people who lose their jobs and the impact of job losses in a part of the economy on income throughout the economy. The results show impacts of approximately 14 jobs per million board feet and $40,000 of income lost for each job eliminated in the timber and support sectors.

Among these communities hardest hit by implementation of the conservation strategy could be:

Cascades
N. Santiam Canyon (Stayton, Mill City)
S. Santiam Canyon (Lebanon, Sweet Home)
Oakridge

Willamette Valley
Albany
Philomath
Eugene-Springfield
Cottage Grove
Roseburg
Riddle

Coast
Willamina/Sheridan
Mapleton
Brookings

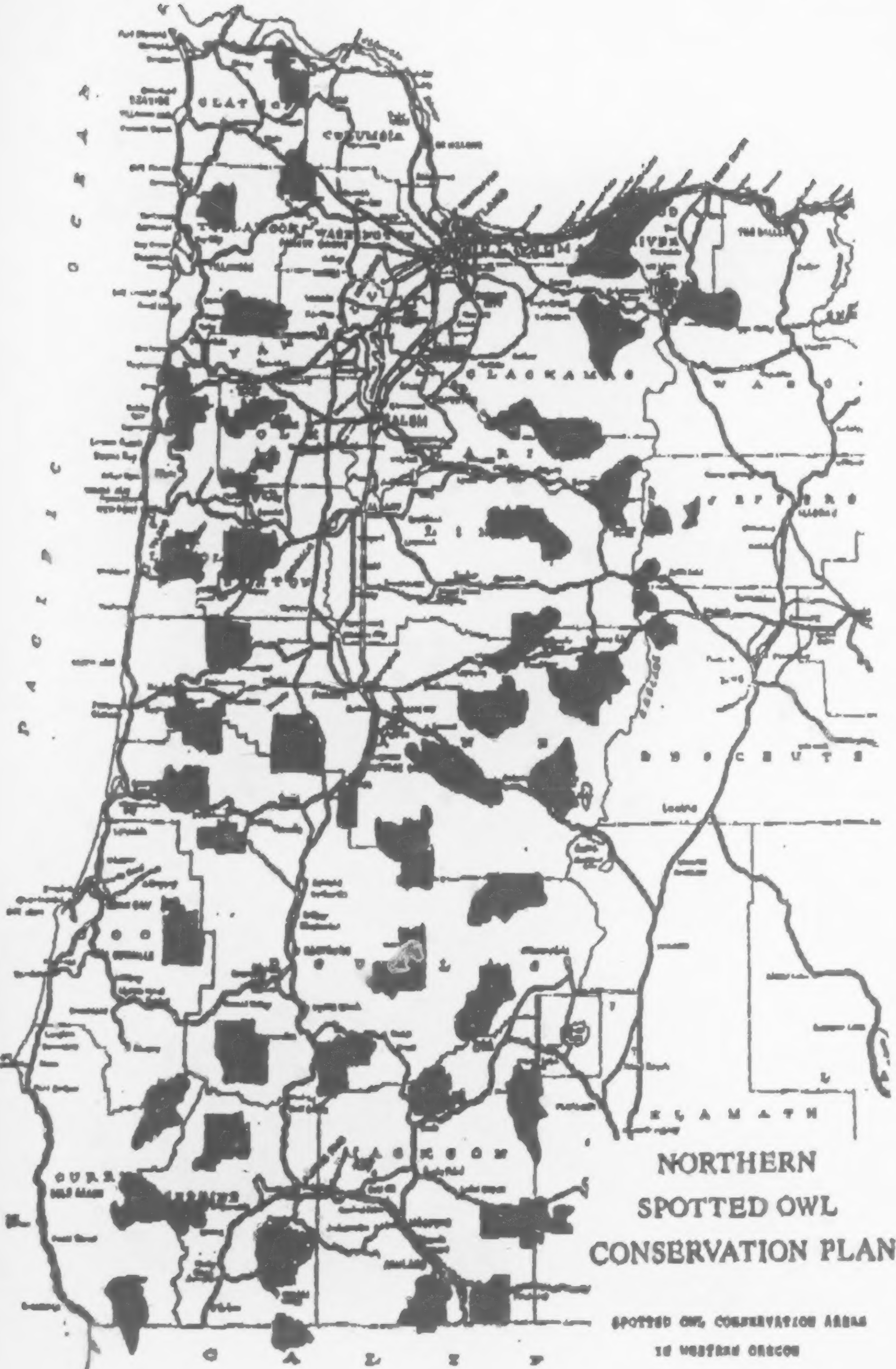
DRAFT

Further Work

The Governor has asked the College of Forestry to conduct a more in-depth study of the socio-economic implications of the Committee's report over the next six weeks. That additional analysis will refine the estimates of timber harvest impact, address the geographic distribution of the economic impacts, and cover additional dimensions of the impact including effect on payments to counties and on the type of raw material available to the timber industry. The target date for a draft report is June 15, 1990.

The State welcomes any comments on this preliminary analysis. Comments should be directed to Gail Achterman, Natural Resource Assistant to the Governor, Capitol, Salem, Oregon 97310.

AnalyOwl.#5



PACIFIC OCEAN
CLATSOP
COLUMBIA
TILLAMOOK
WASHINGTON
CLACKAMAS
HOOD RIVER
WASCO
SALEM
JEFFERSON
LINN
BENTON
DESCHUTES
COOS
DOUGLAS
CURRY
JOSEPHINE
JACKSON
KLAMATH
CALIF

NORTHERN
SPOTTED OWL
CONSERVATION PLAN

SPOTTED OWL CONSERVATION AREAS
IN WESTERN OREGON

Senator **Bumpers**. Well, Senator, let me ask you the question that I was about to ask, and that is, if the owl is threatened and the Forest Service and the BLM come up with, say a recovery plan, does that require an EIS? Is that a major Federal action that would require an EIS?

Senator **Hatfield**. The recovery program would be—excuse me.

Senator **Bumpers**. Dale, do you know the answer to that?

Mr. **Robertson**. Well, it is the Fish and Wildlife Service that has the lead for developing a recovery plan, and the Forest Service and the BLM would cooperate with them.

Senator **Bumpers**. Mr. Turner, would that require an EIS?

Mr. **Turner**. I do not think so.

Senator **Bumpers**. It would not?

Mr. **Turner**. I do not think so.

Senator **Bumpers**. If you cut a tree it requires an EIS, but if you decide to let it live it does not? Is that the answer? [Laughter.]

Mr. **Turner**. Mr. Chairman, excuse me for the delay, it is my understanding and my staff's that we would not do an environmental impact statement on the recovery plan.

Senator **Bumpers**. But that plan could certainly be challenged, once it was completed and offered to the public. It could certainly be challenged in court as inadequate. Could it not?

Mr. **Turner**. Oh, definitely.

Senator **Bumpers**. Which would have about the same impact.

Mr. **Turner**. It is important to point out that we are all in court now on this issue.

Senator **Bumpers**. Yes, I understand.

Senator Hatfield, go ahead.

Senator **Hatfield**. Thank you, Mr. Chairman.

Senator **Bumpers**. Thank you for your indulgence.

Senator **Hatfield** [presiding]. I would yield to the Senator from Montana.

Senator **Burns**. No, go ahead. I am just over here listening. I am afraid we are going to get them darned owls over there in Montana. [Laughter.]

Senator **Hatfield**. Well, I appreciate very much your presence here and your interest, Senator.

Let us start first of all with Dr. Thomas.

Dr. Thomas, if we accept as a fact that the spotted owl is in some peril as a species. And are there are strategies that would ensure the owl survival other than what we have in your report? For example, could we elect to concentrate our protective efforts to the owl in a lesser geographical area where owl populations are relatively healthy—and if you will move that California map down to the Oregon map, I will illustrate my question—rather than take the whole range.

Now you indicated the differential in the health and the viability between the coastal range and the Cascade Range as it relates to my state and still meet the survival objective that you were assigned. Would such an alternative result in less total acreage allocation to the owls, as an example?

Dr. **Thomas**. I understand the question. I think we could keep a viable population down the Cascade Range. However, we would do it with a considerably greater risk in the fact that we would give up a certain portion of the owl's range as occupied range. That makes it more vulnerable to environmental perturbations to a number of other risks. But obviously we are in the best shape down the Cascades, and that is our best chance of long-term viability.

If we did not have the coast range, I suspect that the viability chances would be good but would be reduced in terms of its—or would be increased, in terms of the long-term risk for the species.

Senator HATFIELD. And, Dr. Thomas, you indicated, I believe that most of that coastal area where you have the purple marking is in second growth or cut-over?

Dr. THOMAS. It is in second growth now. We would expect it to come in to suitable habitat conditions some time in the future. Our report—we did a rough risk analysis by subdivision by area. We think our chances of success there are not good; they are poor.

Senator HATFIELD. You are implying, then, that there is an evolving process in the forest life, that a second growth forest can ultimately become an old-growth forest?

Dr. THOMAS. Yes, sir.

Senator HATFIELD. That when we talk about the ancient forest, we are not talking about Genesis I?

Dr. THOMAS. That is correct. In fact, we must continue to recruit habitat inside of the HCAs over the very long term, or the strategy would probably not work. Old-growth forest did not come as Genesis I and nor do they persist forever. There has to be replacement habitat that occurs as other habitat goes out.

Senator HATFIELD. But now assuming that we can separate the old-growth forest question from the spotted owl question—this is what I call the moving goal posts that we have——

Dr. THOMAS. Good luck. Yes, sir.

Senator HATFIELD. They talk about an owl, but what they really have in their mind is the old-growth forest, and then some of them have, not the old growth forest, but they have no cutting of any trees as the ultimate objective. If we can separate the owl from the old-growth question, then, you are saying that it is no longer accurate to say that spotted owls can exist only in old-growth forests?

Dr. THOMAS. That is correct. However, they do exist in their highest densities in the old growth, yes, sir.

Senator HATFIELD. I understand. Just to get a point of comparison, you mentioned about some subspecies in Mexico and California of the Northern spotted owl. What are we comparing in the acreage differences? If we were to find a petition filed from some of those areas about a possible endangered species, what is the range we are talking about acreage in comparison to the Northwest?

Dr. THOMAS. I am not an expert on—first of, I was one of the three people on the committee that is not an owl expert. But we know as we move north in the owl's range, that the habitat, the home ranges become larger because the habitat quality, we assume, declines. I would assume the same thing would happen as we move south, that the habitat requirements would get larger as we went into dryer and different kinds of sites.

Senator HATFIELD. Almost like an hourglass?

Dr. THOMAS. Yes, sir. It appears that Northern California and Southern Oregon are the places that the species occupies the smallest home ranges. So as we move south, if—the territorial requirements, I suspect, would become larger. But that is a different subspecies, and whether it is in any trouble or not, I do not know.

Senator HATFIELD. Following up on that then, in your opinion could extensive owl research, more than what we have been able to conduct so far, definitely describe the so- called structure, that you use the term as structure, that seems to make old growth forest more conducive to the strength and the habitat of the owl?

Dr. THOMAS. Yes, sir.

Senator HATFIELD. And if so, how long would it take to determine if there is a reasonable chance that modified forest management practices might replicate that structure in second growth, other than just the aging of the second growth?

Dr. THOMAS. The generalized—the habitat description is generalized. And one of the first things we suggest as we move into testing of how to produce them—we believe that there is a very good chance that one could produce spotted owl habitat if we went at it intentionally with sylva-culture.

The trick is we have not proved it, and there is no scientific credibility and leaping into something that we have no test on. But in looking at circumstances where spotted owls exist in other than classic old-growth forest, we find that there are certain things that they are associated with, usually a clump of remnant old growth or some older trees, stands that have been—if you will—high graded in the past and the subject of fire history.

The scientists are doing some work now in what we call a backward look or rearview mirror research. They are trying to look back to see if we can dissect what happened to those stands to suggest what might be done to stands. I think we could have a pretty good idea within a two- to three-year period of what those operative mechanisms were and prepare them for test.

Now there are two things that can be done quickly and other things that will take a long time. One is, we can take that retrograde look, and we can try it in the sense of partial harvest of old growth or suitable habitat and see if it will sustain that. Starting from the bottom up with young stands and manipulating them through the suitable habitat would take a minimum of 80 to 120 years. That is obviously a very long time.

So I think our best chance is to start with sylva- culture from what we call the top-down and see if that will hold. I think that can be done in a five to 10 year time or probably less, three- to 10-year time frame, of manipulation of stands that already have owls in them, well established, that we have detailed information on, and to subject those to a series of partial removals of increasing degree.

Senator HATFIELD. In fact, did not the committee consider five other options for ensuring the owl?

Dr. THOMAS. Yes, sir.

Senator HATFIELD. And yet you, as I understand the report, you only addressed in the report——

Dr. THOMAS. You gave me an opportunity, and I would like to clarify something. One is we were not told to develop options. Our charter is very, very specific that we were to develop a credible conservation strategy. There seems to be some mistake about that.

We looked at five options. We looked at considerably more than that. We looked at all the options that were in the supplemental environmental Impact statement that the Forest Service had already plowed through before. We looked at each one of those. We looked at total reservation. We looked at total application of uneven aged-timber management. We looked at larger HCAs and HCAs connected by corridors, and we looked at essentially what we call the strip—just lay in a strip of habitat right down the Cascades and a U up the coast range.

We did those this way: reservation of all of it was obviously neither justified in terms of long-term viability of the owl in our opinion, and it obviously would be politically and economically totally unacceptable.

Senator HATFIELD. And also a long-term rotation of all the forests.

Dr. THOMAS. Long-term rotation, we think, has promise. But we do not have adequate information at this time to allow us with scientific credibility to say proceed with that, we think that will work. The others were either too expensive or we did not think—we thought they were excessively expensive for the result that we would get. And the others that we examined under the supplemental environmental impact statement, when we subjected them to our scrutiny, and in our opinion, they would not serve to produce long-term viability.

So we considered a number of options, but we laid out the one that we thought would—in fact, we laid out the only one that we thought would do the job with a reasonable cost.

Senator HATFIELD. Well, you are trying to meet the same mandates as you saw the CSA in relation to that part which indicates that restoring the owls to areas where they do not exist today is an essential part of a survival strategy. Why did you include that particular——

Dr. THOMAS. We did it in order to decrease the risk. An animal well distributed within its geographic range is certainly at decided less risk than those that are concentrated in a smaller area. I do not believe that the—for example, if the state lands in on the coast range of Oregon to the north did not choose to come into the strategy, I do not think that the population would go extinct. But I think if we could go north and we could connect to the Olympic Peninsula, our risk factors would certainly be better.

Senator HATFIELD. Gentlemen, if any of you wish to comment on any of these questions, I invite your interruptions.

Mr. TURNER. Senator.

Senator HATFIELD. Yes, Mr. Turner.

Mr. TURNER. Mr. Chairman, I might comment just in response to your question on the two other subspecies. The California subspecies is currently being assessed by the State of California. It is interesting that that particular critter seems to do quite well in an oak, evergreen configuration, as a difference to the northern spotted owl. And there is not a lot of cutting going on in those.

As for the Mexican owl, we simply do not know a lot about. But, in fact, the Fish and Wildlife Service has a petition to list that bird. And we have 90 days to consider the merit of that petition. If we were to consider that petition then, we would have a year of comments and then if we proposed to list it, a year later to make a decision. And that particular subspecies, though we do not know a lot about it, extends from Northern Mexico and as far north as parts of Colorado and Utah.

Senator HATFIELD. How many acres are in that range?

Mr. TURNER. We can certainly look at the map and try to get something back to you, Senator. I have no idea. I am not sure anybody knows, but we will take a shot at it.

Senator HATFIELD. Could you use a phrase like extensive or moderate or——

Mr. TURNER. We will try.

Senator HATFIELD. Dr. Thomas, one thing that caught my eye in your report is that, it recommends that lands declared unsuitable for timber production under the Federal Forest Plans not be put back into the timber base. And I assume that covers all types or all classifications that we talk about, categories, extreme quarters, back country, intensive creation areas and so forth.

Why I raise this question is that, as you may know, we have just recently put 274,000 acres of land that was not responding to normal seeding back into the timber base by planting cut-over lands under the FIR project we called it. We, out of research, now have found that there are species upon which those lands can be replanted, primarily new species or different species.

We are now moving over to the coast range to address another 100,000 or so acres to try to put them back into production. I hear people saying that we ought to preserve our trees. And part of that is in reforestation, replanting, and so forth. Some people are always surprised to find that we have more trees than we probably had 20 years ago, if you want to count just trees by population.

Let me ask you, I suppose, what criteria did you use in making this determination? And what was the basis for that determination?

Dr. THOMAS. As I told you that part of our strategy was that owls have to move from one habitat conservation area to another. And they are best served by habitat that is the closest, is close to their preferred habitat as one can find. The first thing we looked at was to connect these habitat conservation areas with corridors of reserved habitat. That would have been very, very expensive and it jumped the cost, in terms of ASQ, even higher.

We took a lot of time to examine the areas between the HCAs, and we found that, if things went as planned, we saw no need for corridors. That there were riparian areas, there were lands reserved because of a number of reasons. There were long rotations, some long rotations for scenic values. And, obviously, if you say on an 80-year rotation, once you are under full regulation, half of that area will be in trees between 40 and 80 years old, which would be suitable—marginally suitable feeding habitat, that animals could move through.

Our intention in saying what would have been a very obvious thing to do or to happen under the pressures for jobs and economics, et cetera, would be to intensify the forestry in between the HCAs which would have made that habitat probably considerably less suitable for movement, connectivity. If that occurred, we would be under extreme pressure to move back to the establishment of corridors, which we did not think necessary, given the current management strategy.

Senator HATFIELD. Are you saying, then, that reforestation should not occur?

Dr. THOMAS. No, sir. Our report very definitely says that reforestation should occur and as soon as possible.

Senator HATFIELD. But why would you say, then, that—production, timber production base, has to have a timber resource.

Dr. THOMAS. Yes, sir.

Senator HATFIELD. And when I cited the FIR project and now the COPE project, these were cut-over lands; they were no longer in timber production. We have recreated those lands, in a sense, by a reforestation process. Would this report language in effect be antagonistic to a continuation of that kind of rehabilitation of these lands?

Dr. THOMAS. Yes, sir. Let me tell you that I think what you are describing may be an exception. We essentially looked at four different test cases, none of which involved the lands you are describing. They were very difficult for reforestation. And we said, looking at the allocations that existed, we wanted to continue that connectivity.

We make a provision in the report for the establishment of some type of an interagency oversight committee that would deal with these kind of questions and say, they obviously did not think about that, we have to make an adjustment. Or an HCA could be slightly adjusted to reduce the impact on ASQ and serve the same purpose. We certainly think that those things should occur.

I would not make any claim whatsoever, nor would the committee, that this report cannot and should not be adjusted appropriately to take into—this is one—we never thought of those lands you are describing, at least, I did not.

Senator HATFIELD. Well, I think it is a very exciting program that we have launched here——

Dr. THOMAS. Yes, sir.

Senator HATFIELD [continuing]. On these lands that otherwise would be non-productive, not only for production of timber product, but more in terms of rebuilding the forest and all the other values that come out of a forest.

Dr. THOMAS. Let me again reiterate that what we were looking at was we were trying to determine whether we needed to have corridors or not. And we said, if we continued the existing management practice, which included these reservations which we were thinking largely of the soil's too—the slopes are too steep, or the soil is poor or it is in a riparian corridor, as long as that continued, the connectivity would be fine. If we went back and intensified the forestry or dropped the rotation age dramatically, then, that connectivity needs to be re-examined in terms of whether we need corridors or not.

Senator HATFIELD. Let me pose the next question in two parts, really with a little distinction. If the owl is declared—is listed under the Endangered Species Act and no critical habitat is designated at the time of the listing, what regulations under the Act, if any, apply to timber-harvesting policies on private land?

Dr. THOMAS. I would defer——

Senator HATFIELD. And on state land? Now the second twist to that—let me give you the whole question, so you can see what I am driving at. If a critical habitat on privately owned land is designated in the listing decision, what regulations apply to timber harvest on those same lands, first, private and then state?

Mr. TURNER. Mr. Chairman, the impact on the private timber lands from a possible listing is basically under the take provision, section 9, where it prohibits people from taking a listed species. But then we have a way where we can actively manage a species to allow, what is called an incidental take.

Let me give you an example with the desert tortoise and the expansion of Las Vegas, probably the country's fastest-growing community, as they move out on acreage with tortoises. If a developer backed over a tortoise with a bulldozer, that would be a take and a violation of taking a listed species. So the way we get around that is we come up with a habitat conservation plan, which allows those developers a permit to take tortoises.

And why would we do that? Because with Cy Jamison at BLM and with the developer and so forth, all of us were able to sit down and work on a habitat conservation plan where we could invest in and protect some very suitable habitat, and with that expenditure of time and effort and land set aside, we had an alternative to protect tortoises.

So with that, we allowed those private developers in the community to expand and have incidental take of tortoises. When you found a tortoise, of course, as a developer you were not supposed to kill it; you are supposed to try to remove it and then see if the wildlifers would accept that in a tortoise reserve.

So that was an example of habitat conservation planning, as we look at that, if in fact we listed the species, yes, we could establish habitat conservation plans on private lands.

Senator HATFIELD. Well, now translate that from tortoise to timber. What is an incidental taking in timber?

Mr. TURNER. That is a legitimate question that has me nervous, the staff nervous and obviously those on private timber lands. We would file for the record an intent of what a taking was to give some certainty to private landowners.

There are court cases. Take traditionally has meant to pursue, harass, shoot, kill—there is a whole list of things. Destruction of habitat, in fact, has been described as a take. But we found through the bald eagle experience and so forth, you could certainly cut a lot of trees where you have seen bald eagles sitting. It is usually destruction of an active nest site that the courts have ruled as an actual taking. I do not know if I clarified that at all.

Senator HATFIELD. I am not so sure I understand, but maybe you have. But I am thinking, if I am a private timber operator, and I own my timber resource, and I am in some of that checkerboard area that involves a habitat, what is my right or future under this declaration as to continuing a timber harvest program? Let us say I am the best kind. I am replanting, and I am keeping my timber for my sons and my grandsons and so forth.

Mr. TURNER. It is my understanding, Senator, that we do not have the authority to tell a private landowner that he cannot cut timber, that he cannot cut all his timber. The only time we would come into play is if in fact there was evidence that he had taken an owl. So we hope, if the owl is listed, to give a common-sense, responsible definition of what we mean by "take" to remove that uncertainty. But that is the only time we can address the private owner with his property, if he is actually taking a listed species.

Senator HATFIELD. I am not any more assured than I was before. But I am not a private timber owner.

Mr. ROBERTSON. I might add, Senator Hatfield, we do have a court case on the red cockaded woodpecker, which is a threatened species, where the Forest Service has been charged with a taking, and the judge agreed because we destroyed the habitat. So there are court precedence on habitat destruction.

Senator HATFIELD. They also have identified another kind of a measurement by saying that private lands, as I understand, Dr. Thomas, in your report within the HCAs, can provide a foraging habitat. The term foraging habitat, can you define that? Or someone define that in terms as it might relate to management practices on private land?

Dr. THOMAS. Yes, sir. I do not think it—we did not intend to require anything from private landowners. We merely said that as a by-product of their forest management for production of commercial forest, there would be a period of time on that land where stands would be a suitable aging structure to provide some foraging habitat which is, as I recall, certainly not old growth. It is stands that are basically 40 to 80 years old that provide some ability for the owls to feed there.

We had no intent of—and did not require anything of private landowners. That would come as a matter of course.

Senator HATFIELD. Dr. Thomas, I would like to interject at this time a couple of questions on behalf of Senator McClure. On February 6, 1990, committee member Dr. Jered Verner wrote a professor in Finland asking for information about birds on islands in the Baltic Sea which the professor had studied. I have a copy of the letter that he wrote.

Dr. Verner wrote: "Our thoughts are converging on about 20 pairs for HCAs, but we lack good empirical evidence from birds to help us make the decision or to defend it in a court of law."

Dr. THOMAS. Yes, sir.

Senator HATFIELD. Do you agree with Dr. Verner that as of February 6, 1990 your committee lacked good empirical evidence to support your decision on the size of HCAs? And would you, please, explain why your committee first decided how large the HCA should be and then began looking for empirical evidence to support your decision? Would you also explain why your committee felt you had to collect information to defend the plan in a court of law?

Dr. THOMAS. Yes, sir. The scientific process that I described earlier, we did not build the 20 pair and then say we want to back it up. We came with a hypothesis, given all the mapping that we had done as to what was possible, is would 20 pair areas be satisfactory in terms of the habitat conservation strategy.

We then tested that with empirical data, that is, research data or any biological information we could gather from anywhere. No, as of that moment we were collecting published literature. We were in contact on the telephone with researchers all over the world, and all over the country, of which we could gather information.

We continued to gather information on this subject until we were involved in the last two weeks in the final writing of the report. And so—and the reason why we defend it in a court of law? It seems like anything anybody does in terms of land management this day and time ends up in court, and that seems a reasonable test that one might want to be aware of.

Senator HATFIELD. The process, if I could follow up, on establishing the 20 pair as the guideline or goal or whatever you want to call it, would you underscore again the basis for picking that particular figure?

Dr. THOMAS. Yes, sir. First, 20 or more is the criterion. There are HCAs that range all the way from one owl to over 50. So there is a considerable array; 20 was the one that appeared to be the feasible one for specification in the standards and guidelines.

Senator HATFIELD. Based on previous studies of other birds?

Dr. THOMAS. There were—I will not go through them—but there were one, two, three, four—five studies, essentially, from various places around the world that involved islands, and how long would the population persist on that island. We looked at some that were close to the mainland, which we knew we would get exchanges of birds from the mainland to the island, which is probably close in theory to what we are looking at here.

And those seemed static—could sustain themselves over the length of the study, which varied from nine to 35 years, around 20 pairs. Those that were less than that had a tendency to disappear. Those that were more than that were even more viable. We looked at information from islands that were far off the coast land off the British Isles. And those that were essentially totally isolated operated somewhat the same way but went extinct. Local extinctions occurred at a more rapid rate.

Now in the conservation biology none of these were on spotted owls, obviously, and flying over water is far different from flying over land. However, the basic biological theory for birds of that size seemed relatively consistent in the empirical data that we could find.

So we took that information, and we said, that is not adequate. It is the best we can do, but none of those studies are adequate for us to be scientifically credible, if we just prick that number. So then we went to a considerable modeling exercise, where we handle these things inside of a mathematical structure. It involves such things as distribution, ability to move through connected habitat, disbursal range, age of the owl, reproductive rate, fecundity, what we call birth and death rates—all the biological information that we could crunch into the model, and said, now let us try that.

And we ran those and essentially received information that said, five pairs were not a lot better than a single pair; 10 had a much longer persistence time than five. And we began to go flat on the curve. In other words, we did not get much better once we got to 15.

However, the model told us, with some degree of sensitivity, that that only worked when we had full occupancy and full habitat condition within the HCAs. The average HCA has 40 percent to 50 percent in suitable habitat at the present time. Our interpretation of those models warned us to be careful with that. And so we planned at 20 pairs, and that is where that came from.

There were two tests. One was the empirical evidence from island biogeography and actual studies of birds of the appropriate size, and the next was the mathematical modeling.

They upheld the hypothesis that we would be in good shape with HCAs of about 20 pairs.

Senator HATFIELD. Dr. Thomas, the second question also relates to the letter written by Dr. Jared Verner. He wrote in the same letter that: "Our group has the force of Federal law behind it as a congressional bill passed last fall requires agencies to implement our plan or explain in writing to Congress why they decided against it."

Would you please explain the inconsistency between this statement and the statement in your report that your committee merely proposed a plan, and that it was up to others to decide whether to adopt the plan?

Dr. THOMAS. Yes, sir. I see no inconsistency at all. That is exactly what the law said, that they would either adopt it or explain why not and modify it. I do not see that as inconsistent at all.

Senator HATFIELD. You do not think that—well, maybe I should ask you the citation, if you know the citation of the federal law that is referred to, because Section 318 that we are functioning under now does not require this. Mr. Robertson, is that correct?

Mr. ROBERTSON. Section 318 has a paragraph dealing with this report. And it directs the Forest Service to revise our spotted owl decisions and to, I think, it says consider—no, it says:

> We shall consider any new information gathered subsequent to the issuance of the record or decision, which was my decision back in December of 1988, including the interagency guidelines for conservation of the Northern spotted owl developed by the Interagency Scientific Committee.

So I shall consider that.

Senator HATFIELD. It is considered, but in this language it says, "Our group has the force of Federal law behind it as a congressional bill passed last fall," which we have to assume was Section 318, "requires the agencies to implement our plan or explain in writing to Congress why they decided against it." I do not read any language of that kind. Do you?

Dr. THOMAS. Senator, let me—I did not read that letter. In fact, I have just now encountered it. We were searching for evidence. Dr. Verner signed that letter under his personal signature. It did not have anything to do with the development of the plan, nor evidently, does it have anything to do with whether they adopt it or not. Dr. Verner is not here, but I do not know that I consider it really germane. It did not have anything to do with the plan, and I do not think it has much to do with what the agencies are going to do.

Senator HATFIELD. Well, we should pursue that probably with Dr. Verner. But there is no disagreement here amongst us now that there is no language in any law that you are aware of that requires implementation of the plan, but rather this is a matter to be considered and acted upon, as Dr. Thomas says, by others and himself or the agencies.

Let me turn a moment now to Mr. Robertson. Chief Robertson, on page 3 of the Thomas Report, the ISC recommends abandoning the current owl management system based upon the establishment of spotted owl habitat areas in favor of protecting larger unfragmented blocks of forest for owl habitat, as demonstrated here on the map.

These areas would be called Habitat Conservation Areas, or HCAs, as you know. In light of the economic impact that you have thus far, assessments that you have prepared, you along with the BLM, Chief Robertson, as well as those reports that I know you are familiar with, prepared by the State of Oregon, what analysis has the Forest Service at this time done since the release of the Thomas Report to either substantiate or modify or reject this recommendation?

Or what management alternatives have you considered in lieu of the ISC recommendations that would maintain viable owl populations, and at the same time mitigate some of the economic impact that you have made an assessment on?

Mr. ROBERTSON. Basically what we have looked at is the Interagency Scientific Committee recommendations and possible boundary changes that would achieve the guidelines that is set forth in that report but with less impact on timber sales.

Senator HATFIELD. Pass that by me again, would you, please?

Mr. ROBERTSON. Well, the Scientific Committee report has lines on a map and each one of those habitat conservation areas has a specific or a certain impact on timber sale level and jobs and economic effect. The report also includes some guidelines on what we are trying to accomplish: 20 owls, pairs of owls 12 miles apart. And what we would like to look at is try to stay within the guidelines but see if some boundary adjustments could be made that would reduce the economic impact of implementing these boundaries just as they are.

And if we did that, we would also consult with Dr. Thomas and the committee that put the report together to make sure we were staying within the guidelines, but maybe somewhat modified boundaries.

Senator HATFIELD. Does that mean some of these purple areas have been reduced in adjusting these guidelines and also these boundaries to diminish the economic impact? What has that done to that map in terms of the——

Mr. ROBERTSON. Well, none of these boundaries have been reduced or changed. The decision that we have to make is to change our spotted owl management decision that is in the regional guide, which then provides direction in the forest plan to look at these guidelines and how best to meet them, using these areas as a core area, and see if there are some adjustments within those guidelines that can be made to lessen the impact.

Senator HATFIELD. Well, let me back up a minute. You have been proceeding on a forest planning system in which you have incorporated in that system recognition of the owl.

Mr. ROBERTSON. Yes.

Senator HATFIELD. Now we have the Thomas Report. And what I am getting at is, has this expanded, or constricted, or diminished? Or what has been the impact of the study upon your forest plans and in relation to mitigating the economic impact? Has it diminished the economic impact and so on?

Mr. ROBERTSON. Well, we have not affected the economic impact as of yet. What we have now is forest plans that total up a reduction of 380 million board feet in allowable sale quantity under existing spotted owl decision.

Now, if we implement the Interagency Scientific Committee, that would increase that, or that would take an additional—or I should not say an additional—that would further reduce 819 million board feet. So what we have got is both systems now, one taking out 380, the other would take out 819, if we operated both systems.

So if we are to implement, or if we implement the Interagency Scientific Committee, there is a lot of overlap with this 380 because a lot of those are inside the habitat conservation areas. But there are some that outside that once this decision gets made, if we adopt it, we can release some of this 380 that is tied up under our existing spotted owl management plan. And we think we can capture 100 million, 150 million board feet from our existing spotted owl management plan, if we implement the new one.

Senator HATFIELD. What you are saying to me, as I understand it then, is that in your normal forest planning process, you are incorporating economic criteria as well as professional forestry and environmental and owl considerations and so forth. The Thomas Report is exclusively a scientific assessment without any economic input. And you are now in the process of trying to put that—overlay that on to your forest plans. But is there then a new economic perspective that you are looking at that has been created by the overlay of the Thomas Report?

Mr. ROBERTSON. That will be done as part of the forest planning effort.

Senator HATFIELD. And when do we expect to get some kind of a document on what that assessment is, or what the impact of that is on harvest, on economics, jobs?

Mr. ROBERTSON. Well, we have it here by forest now based on the implementation of the Interagency Scientific Committee report just as it is. What we plan to do, as I mentioned in my opening statement, if the species is not listed by the Fish and Wildlife Service on June 23rd and does not trigger the Endangered Species Act, then, the Forest Service has the obligation to revise our decision on the spotted owl under the National Forest Management Act.

And shortly after June 23rd, if it is not listed, the Forest Service will proceed with a proposed alternative of how we propose to deal with the Thomas Report and have that—and that would be a proposal for the regional guide and have a 60- day public review and comment period. And we should have by August or so the public comments. And we would then, based on that make a decision and have it in effect by September 30.

Now that is a decision on the regional guide, which provides direction to the forest in forest planning. At that point the forest would then have to take that direction and amend the forest plans to reflect that.

Senator HATFIELD. If that is declared as an—if it is not declared?

Mr. ROBERTSON. If it is not declared.

Senator HATFIELD. Now walk me through a declaration of endangered species?

Mr. ROBERTSON. Well, basically, our interpretation and that of our lawyers is that, if the endangered species is triggered, that takes precedent over the National Forest Management Act. So we will be managing it then under the Endangered Species Act, which then gets us into the thing that Mr. Turner talked about, a recovery plan.

We would manage according to that recovery plan. Traditionally, Forest Service has worked cooperatively with Fish and Wildlife to help develop recovery plans; I would expect the same thing. Plus, we would have to consult then under the Endangered Species Act on every action that we propose to take with the Fish and Wildlife.

Senator HATFIELD. But a whole new data base of economic impact from the result of the Thomas Report would also have to be cranked in under that process—social, economic, scientific—all of these databases. Would it not?

Mr. ROBERTSON. If it is listed?

Senator HATFIELD. Yes.

Mr. ROBERTSON. Well, I think as Senator McClure pointed out the Endangered Species Act says that in the delineation of critical habitat you can take into account economic factors.

Senator HATFIELD. And so the Forest Service would be doing that in its reassessment of the whole plan?

Mr. ROBERTSON. That is true. But the Fish and Wildlife Service has the lead for the recovery plan, if it is endangered. So we would be working cooperatively with them. You see, if it is——

Senator HATFIELD. I want to ask Mr. Jamison the same question. But I have a feeling we are kind of sparring here on semantics rather than getting to the crux of what I want to establish. And maybe Mr. Jamison——

Mr. JAMISON. No sparring with me, Senator. I will just tell you up front. I think we will come up with a different option. And I think our option will have different economic impacts, I would assume to be less than ideal, because when we are at 62 percent in Western Oregon, we have to work that number down and see if we can still maintain much of what is in Jack Ward Thomas' thrust there. And see if we cannot come up with some other ideas, other methodology, and reach the same goals. I think that is our charge as a manager, and we are going to do that.

Senator HATFIELD. Does anybody disagree with that? And in that, Mr. Jamison, you are considering all the impact data: scientific, economic, social, et cetera?

Mr. JAMISON. Everything, Senator.

Senator HATFIELD. You are looking at options and alternatives, you are looking at new management plans, or revisions, or modifications. All of these factors will have to be included in the process following June 23rd the trigger date, if it is declared threatened or endangered. I think we also might as well put it right on the table, none of us have any doubt, do we, that it is going to be declared?

Mr. JAMISON. I am not going to second-guess my friend sitting next to me here. But I am operating on the assumption it will be. And I think that we have to come up with an option. And if it is acceptable, I think, we could go with it. If it is not, then, I am going to go back and try again.

If I could just show you a map of your state, of Western Oregon, and I am sorry it is so small. But the ownership is so scattered, as you well know. I do not know whether you see these little black dots in here, Senator, can you? It is kind of small. The HCAs are the gray hatched areas, which I think stand out, and they correspond over to the main map.

All the little black dots that come down on the south and the west here, we have to protect basically a quarter mile around, and that is in one category. Those with the circles up here which are in purple, we have to protect a mile and a half around, plus the HCAs. And those tend to float as we find new owls.

Also to cap it off, which really puts us in a management bind, we are checker-boarded. And then the 50/11/40 rule comes into play to keep 50 percent of the stand, 11 inch diameter larger, with a 40 percent crown enclosure, and that is the rest of the areas. So I think maybe we ought to look and see if there is not another management option that keeps about the same number of owls or maybe more on a long-term basis, and that is what I am going to try to do.

Mr. ROBERTSON. I might just add, Senator Hatfield, even if it is not listed, and we operate under the National Forest Management Act, that is also a pretty tough Act, which requires us to maintain diversity. And according to the regulations, implementing that, basically you have to have a viable population of all species throughout their range, well distributed on the national forest. So that is a requirement under the National Forest Management Act. It is not quite as tight as the Endangered Species Act, but it is a pretty tough act.

Senator HATFIELD. Well, once these plans are finalized, is there anyone in doubt as to the fact that we are probably going to have to legislate them?

Mr. JAMISON. May I comment on that, Senator? I think that we need two certainties in the operation. And I think history has dictated very well in your experience with section 318, far more than in mine.

You are going to have to have some certainty for the timber industry about what will be available to them, and I think that is a legitimate and wise thing to do. On the other side, you are also going to have to have some certainty for the environmental community to know we are going to do some certain things. And how we work to put those two in a package that is acceptable, but if we do not, we are going to be right back, as soon as our protection goes off, either it is listed on the 23rd or September 30 comes along, we are in a pickle again.

Mr. ROBERTSON. In fact, we are already in court. I mean, the lawsuit that resulted in our injunction over a year ago gets reactivated on October 1, once 318 expires.

Senator HATFIELD. Well, Chief, this brings me to a most immediate issue then, can you give us an estimate on time following June 23rd? And let us take the scenario that it is declared as a threatened or endangered species? You take your forest plans that you have been moving on forest by forest, you now have to revise those plans with the Thomas Report as a recovery plan, assuming that becomes the guideline. Do we have the economic, social, all the other database?

What is the time frame for all this to occur? If you can complete that task?

Mr. ROBERTSON. Well, again, it is the Fish and Wildlife Service that has the lead on that.

Senator HATFIELD. I am asking you this as the Chief Forester from my position on the Appropriations Committee that is looking at fiscal year 1991 which begins October 1 of this calendar year, and which we are not going to be in session in August, we are going to have a recess in June. And we are looking at, you know, an appropriations process that has to fund your agency beginning October 1, hopefully without a continuing resolution.

Where are we going to base our ASQ? Where are we going to base our road construction program? Where are we going to base our timber sale preparation program? All your other counts, on what base line?

Mr. ROBERTSON. In our case, we are keeping our options open to implement this in our timber sale planning that we are doing in 1991 and out. We can possibly double up on some of the areas outside of these. But until the final decision is made, which could be June 23rd, we are keeping our options open until that decision is made.

If the Fish and Wildlife Service, it depends on what they do at the time they list, whether they have some kind of interim recovery plan or interim guidelines that BLM and Forest Service can respond to. Or if not, the Forest Service and BLM then has an obligation to go to them for consultation and say, here is what we propose to do. They have 60 days to respond to us. I have not thought it all the way through, but if it is listed, the Forest Service is likely to go forward with a proposal based on this or at least part on the basis of this to the Fish and Wildlife Service. They would have to respond to us then as to whether that met the requirements in Endangered Species Act.

The way I see it, we are going to get down to the Thomas Report, whether the Fish and Wildlife Service does it on June 23rd or they do it 30 days later when the Forest Service comes in with our proposal for consultation which would be based on this. So any way we go at, we have got to get down to the Thomas Report.

Senator HATFIELD. All right. What is your sales preparation process at the moment for 1991? What is the status of that sales preparation for 1991 at this point in your agency?

Mr. ROBERTSON. It is in bad shape. The pipeline is dry. The reason for that is, I have got all the timber sale people revamping 1990 sales. We are redoing about 20 percent of those as a result of the advisory committee recommendations and through our informal consultation with the Fish and Wildlife Service.

We are doing a lot of extra work with the consultation and the advisory committee, so the crew of people in Oregon, Washington that ought to be spending their time this year on 1991–1992 sales are back revamping 1990 sales.

We are going into 1991 with very little pipeline done. It is our estimate that we are probably to the point in the neighborhood of

$3 billion, plus or minus a couple of hundred million, is about what we are capable of doing in 1991, just because of the pipeline problem.

Senator HATFIELD. Mr. Jamison, do you have as grim a story to report from BLM on that point?

Mr. JAMISON. Hopefully not. We have been conferencing all along. I think if it is not listed we will meet, or be darn close to meeting, section 318 targets or mandates in 1991. I think that we are doing the same thing—we have to run back and try to find the non-owl timber sales if it is possible, and we can probably have on the street between 750 million and 800 million board feet.

Senator HATFIELD. None of you have addressed, though, the time frame vis-a-vis the appropriations process. It is, to me, one of two options, either you are going to come up with an ASQ for 1991 that is defensible or we are going to have a short-term bridge or a modification of 318 to get us into the time when we can really see the full implementation of a declaration of endangered species and the recovery plan and all the other processes. I may be wrong, but I just do not see how that is all going to happen under any circumstance, under the best-case scenario, before the deadline of fiscal year 1991 is upon us in the Appropriations Committee.

Mr. JAMISON. I think you are correct, Senator. It possibly could happen the other way. But I think if I come up with some other option or another plan, they are going to have to review it; it is going to have to be plugged into the planning system and we have to go from there.

Senator HATFIELD. Is there any option that you see that Congress can play to somehow help to devise a viable ASQ for fiscal year 1991 at this point in time, other than a short term or bridge over into calendar year 1991?

Mr. JAMISON. I have too many what ifs. I guess, really, the key linchpin is: (a) I am not going to accept the Thomas proposal because I think we can come up with a better option. If I come up with an option that is acceptable up here and maybe is acceptable down with the Fish and Wildlife Service from their end to some degree, then if that happens very quickly, yes, we could do it. We could possibly get done before. If not, and we are sent back to the drawing boards, your guess is as good as mine.

Mr. ROBERTSON. I might just add, Senator, we are talking here about who has got the lead, whether it is the Fish and Wildlife Service, the Forest Service or the BLM. It is our intent to work cooperatively among us. One agency has the lead, depending upon which decision is being made. But we intend to work cooperatively among us in carrying out those decisions.

Senator HATFIELD. Again, I would much prefer to see this whole thing moved through the authorization process. That is where it belongs. I have not relished the role of trying to establish the forest policy of this country vis-a-vis the appropriations process year after year. It is not the place it should happen. At the same time, it was the only place where it could happen.

But that is why we are here in this authorizing committee today. But unless I am inaccurate and totally off-base, I am trying to project all of this process down the road through an authorization process that can give us the base to act in an appropriations committee. I just really, at this point, do not see it for fiscal year 1991.

Mr. Robertson. I think you have got to make some assumptions and proceed on the best assumptions, realizing there is a lot of uncertainty about those. I know one thing, in the Forest Service we have got—since we devoted our time and effort revamping the 1990 sales, we have got to double up our efforts in 1991 to do twice as much advanced timber sale planning. So I think we have got to make some assumptions like that in our 1991 appropriations.

But our people have got to know where to go. Right now we have got a lot of uncertainty out there of where to go to lay out timber sales.

Senator Hatfield. We cannot pull a figure out of the air as an appropriator. We have no competence to do that. We have to look to you as the managers. We have to establish a target figure or an ASQ, at least on a temporary basis for one year, recognizing you are making no pre-commitments on any other basis.

Mr. Robertson. We can give you that now. We can do that.

Senator Hatfield. A doable one?

Mr. Robertson. Doable under reasonably optimistic assumptions. [Laughter.]

Senator Hatfield. I am on the summit committee dealing with the budget deficit. And some of those assumptions given by OMB at the beginning of the year have not turned out too well.

Mr. Robertson. You have to realize we are charting some new ground that none of us have been through before of this nature. I think we have worked together, like the grizzly bear or another endangered species or threatened species, but we have never worked through something this huge with such high stakes, such high-volume business, before. So we are charting some new ground.

Senator Hatfield. I understand.

Now I want to put this question to Mr. Turner. Mr. Turner, you are the key player here. Do you see a mechanism available to work with the Forest Service and the BLM to achieve an economically viable timber sale level for fiscal year 1991?

Mr. Turner. Mr. Chairman, I do. I know of the uncertainty that you talk about and the fear of your constituents. There are what-if's, but I submit that the world does not have to stop, the sky does not have to fall and we can have a workable timber program, not only the 1990 sales under section 318, but also sales of uncut timber prior to section 318 because there is a lot of volume sitting there. That is a completely different scenario than the section 318.

I also feel that we can proceed on an orderly way with a 1991 program, get that planned, inventoried, bid and sold in an orderly fashion. I would like to state that ironically—or not ironically—everybody says what if on the listing question, and I sometimes feel that perhaps that is not an adequate focus.

The BLM and the Forest Service, as I understand, are working under a legislative mandate that is not dissimilar to the Endangered Species Act. Chief Robertson mentioned that the laws under which they have to manage their forests talk about maintaining this viable population, that is the same as mandated in the Endangered Species Act.

So, the element that we bring in is no more than a conscience, a Federal conscience, for these two agencies to carry out their jobs under other statutes. We have spent considerable weeks in the regions with BLM and Forest Service people. They have to first make the decision, that is the way of the Endangered Species Act—they do not wait on us. They have to come up with management scenarios; make their own biological assessment; and decide whether or not it impacts owls and bring it to us for consultation. So, only those actions that they think might impact owls are brought to us.

Fortunately, we have spent a year, sometimes agonizing, but working surprisingly well, on conferencing. We plan, if the owl is listed, to use the same guidelines that we have used this past year for conferencing when they bring sales back for consultation. There will be some modifications due to the suggestions of Dr. Thomas, but I do not foresee them as being major ones.

We will have a road map for this coming year, ready to go, ready to consult, with these agencies. Much of whether or not there are delays or uncertainties will depend on what Chief Robertson and Mr. Jamison, as they struggle, with what their management scenario will be, whether or not they wish to embrace the Thomas Report; that is their choice. If they choose not to and have a new scenario then it might take more time.

But we feel that within the process there is not the great uncertainties and the fears—because of the cooperation and the science that we have available I think we can proceed in a very orderly fashion. At least that is my hope and that is what our agency is prepared to do.

Senator HATFIELD. Mr. Turner, I hear you saying that there is what you might call guidelines for consultation with the BLM and with the Forest Service either in place or coming into place to review timber sales if the owl is listed.

I assume that in that process or in that framework you know what kind of information you will need. So that these folk–Mr. Jamison and Mr. Robertson—know the framework, the process, and know what will be expected, so we do not have to send them back for a month of research or gathering of data. They can work along with you on an expeditious way. Do I understand you are saying this?

Mr. TURNER. Mr. Chairman, that is correct. The criteria that we work on, we have worked on jointly, we looked at each other's problems and mandates under the law. Because we have been conferencing on a regular basis and because of the science we have available, and because of the Thomas scientific committee, we have a head start on the normal process that would come into being if and when a species is listed.

Senator HATFIELD. Tell us, Mr. Turner, what is your view of what would happen to the timber under contract but not harvested if the owl is listed. I think there is over 4 billion board feet, 4.6 billion maybe, in the Forest Service, and about 1.3 billion board feet, or a total of about 5.9 billion, 6 billion board feet. Will it remain available and accessible for harvest in fiscal year 1990 and 1991?

Mr. TURNER. Your question relates to all the timber that is sold but uncut?

Senator **Hatfield**. It is out on contract, sold, but has not been harvested. If the owl is listed.

Mr. **Turner**. One of these land managers, correct me, but we have to consider two scenarios. First of all, the section 318 sold, but uncut, timber has been conferenced on and has very good biological assessment, as was set by the scientists, so those will go rapidly.

There is a considerable amount of timber that was sold back two, three, four years ago and, for economic and other reasons, is still standing. It is my understanding that the Forest Service has not put together the same kind of biological assessment for these sales; it is not available to them. They have not had the time, the resources, to collect it. So the biology is not as good. I think that is in the billions of board feet.

We have pledged to the Forest Service and are in a dialogue now that we will also turn those around on the basis of packages, based on the best biological information available from the Forest Service. Therefore, we will not have to hold up those particular sales while we go out and have six subsequent callings to detect the presence of owls, et cetera, because that, would be a roadblock in going ahead with those particular parcels.

I think all the sold, but uncut, timber we can move in an expedient fashion. I do not want to mislead you because I can foresee that some of those would be impacted. We would come back to those agencies, and I think they are foreseeing that they might need to modify these particular sales. There might be a small percentage of ones that we would ask them to cancel or buy back.

Overall, I think it would move smoothly.

Senator **Hatfield**. You are saying to me that there will be a volume of that timber that would have to be, quote, "consulted" under the new data base and the application of this new information that has not yet been applied to those sales.

Mr. **Turner**. It would be the responsibility of the regional foresters and the State Directors to go back to their packages, and they make the decision based on which ones they think they should consult on. That would be their decision. But, fortunately, Fish and Wildlife, Forest Service and BLM folks have been meeting for weeks on this, looking at their packages and how they are going to handle them. That is why I am confident that, due to that kind of cooperation and diligence, we will be ready to move and handle those packages expediently.

In fact, we have said we will turn around in 30 days when the law allows us 90—or sooner than 30 days.

Senator **Hatfield**. But in a sense, Mr. Jamison and Mr. Robertson, those are going to be the same personnel that would otherwise be preparing new timber sales. They are going to have to go back and go over the existing timber sales under contract that have not yet been harvested. How do you assess that impact?

Mr. **Robertson**. Well, they are the same people and so will be diverting their time and effort to go back to consult on existing timber sales already made rather than out doing advanced timber sale preparation. So, it is an added cost and added effort.

Senator HATFIELD. What is the government's liability on breaking the contracts, assuming some of this will not pass muster? What is the government's liability of breaking the contracts that are valid contracts? Do you have any idea of that economic impact?

Mr. ROBERTSON. It could be considerable depending upon how many had to modified or canceled.

MR. JAMISON. I would echo that. I am told that we have about 600 million board feet that has not been conferenced.

Senator HATFIELD. Gentlemen, I need not emphasize the point because you are so close to it all, but when you are talking about 6 billion board feet, or 5.9 billion to be more precise, according to my figures, and whether you are talking about 10 percent, 20 percent, 30 percent, 40 percent of those contracts that are valid contracts that might have to, after review, be invalidated because of failure to meet the criteria under a declaration under the Endangered Species Act, we are talking about some megabucks; are we not?

Mr. JAMISON. I would say you are correct, yes. I would like to mention one thing.

My understanding was, and I think Dr. Thomas could clarify it, that they assumed that we would go ahead and cut the timber that had been offered and sold. Is that correct?

Dr. THOMAS. Yes.

Mr. JAMISON. That was an assumption.

Senator HATFIELD. That was my understanding. Dr. Thomas did not address this category that we are talking about.

Mr. JAMISON. That is correct. But it is still a hoop in the Endangered Species Act that we are going to have to go through. In our history out there, just looking at the sales that we have offered, like in fiscal year 1990, we had 115 sales; and out of those 115, 85 were protested. So I would assume that if somebody wanted to try to delay or stop us that that opportunity would be there for them to do so.

Senator HATFIELD. I would like for you to present for the record as a follow-up question—I know you do not have the data now—take this 5.9 billion board feet and give us two or three scenarios on percentage reduction under a declaration. Add that to the economic impact data that you are considering already vis-a-vis jobs, vis-a-vis additional cost to the government to buy off those contracts or to break those contracts. Take 10 percent, 40 percent, 30 percent, I do not care which, but give a range of a possible two or three scenarios.

Let me ask you one other question, Mr. Turner. I understand, mostly through the media, that the administration is considering making a listing decision prior to June 23rd. What are the advantages that you would consider making a listing decision before June 23rd or before the one-year deadline? And what are the disadvantages?

May I ask you the question if it is not classified information, is there a possibility?

Mr. TURNER. The statute allows us to make a decision anytime on or before June 23rd. There has been no decision and I do not believe either of our Secretaries have even considered it.

Senator HATFIELD. Are you considering the possibility and a recommendation?

Mr. Turner. We have discussed that, and the positives—perhaps the gentlemen here at the table would like to add to it.

The positives in my mind would be to expedite the certainty that you and your constituents are looking for. We can get on with consultation both on sold and uncut; get the parameters, get guidelines for Mr. Robertson's people as they try, as the snow melts, to get on with the 1991 program.

We have to go out and take a year with public comment and developing a more permanent recovery plan. I know you understand that. Those would be the positives of an earlier decision. If the owl is listed, let us get on with it and set some parameters and try to define a workable timber program.

The downside on it, perhaps, would be that there is a lot of timber being cut now. Perhaps there would be a fear of folks that some timber they might not be able to put on the ground. They did not get that opportunity. Though I do not particularly see that, as I talked to our managers. So, because we are going through conferencing now, that would now click into a consulting process. It seems to me there might be some advantages as to certainty.

I would like to say that I personally have not seen the package from the region. It is my understanding that it has now arrived here in Washington, and I have asked to put a team together of five people with scientific background to review that. I cannot predict where that will take us because they are to scrutinize the science and the suggestion that the region has made. There has been no decision on whether or not it is an advisable goal to reach before June 23rd or not. Perhaps Mr. Jamison or Mr. Robertson would have some observations on that.

Senator Hatfield. Another matter that has been talked about by some of our colleagues over on the House side more than on the Senate side, and by other people as well, is the process for securing an economic exemption for proposed Federal action under the Endangered Species Committee. Please define, if you will, for us what type of action might be considered under review by the so-called God Squad? Would it be timber sales? Would it be road construction? Would it be a timber sale contract? Would it be a combination thereof?

Mr. Turner: Mr. Chairman, it has been rarely used and certainly not in my short tenure here. It is my understanding it is a gathering called by the Secretary of the Interior with cabinet-level administrators from around town. The exemption process is not an uncumbersome or an easy one.

First there would have to be an action plan from a Federal agency. They would bring that to the Fish and Wildlife Service for consultation. The Fish and Wildlife Service, it is my understanding, would have to have made a jeopardy opinion. The package would then go to the exemption committee with all the supporting biological information. They would have to demonstrate to the so-called God Squad that there were no prudent and reasonable alternatives.

Now, that question would be much broader before that committee, as I understand it, than just the configuration of timber sales. There would be the questions, "Are there other sources of timber; are there other materials for substitution in the process?" The committee would have to have demonstrated to them that there was no alternative to the jeopardy opinion.

I would think you could package a bunch a timber sales that are so extreme that you force the Fish and Wildlife Service. You would also have to convince the exemption committee by law, as I understand it, that there were not any alternatives you could have taken to the Fish and Wildlife Service that could have avoided the jeopardy opinion.

Then you would still be under, as I understand it, other requirements: the Organic Act of the Forest Service that they are working under now and what stimulated the Thomas effort. It does not take care of the possible problems of the Migratory Bird Treaty Act, which is certainly another law that must be considered in management of the spotted owl.

Senator HATFIELD. You would give it a rather slight possibility in your assessment?

Mr. TURNER. Well, I did not mean to do that because that is——

Senator HATFIELD. I am asking for your assessment.

Mr. TURNER. The only reason I mention those difficulties, Senator, is because the exemption process has been talked about in the press as if all you have to do is call the committee and come in and exempt something and walk back out the door. It has worked for my own State with a dam project. It was Grey Rocks dam and its possible impact, I believe, on whooping cranes. But it is easier to think that one through—a specific dam, a specific slab of concrete and a diversion. As I have heard the attorneys discuss it, it becomes more difficult with a region as large as that encompassed by the spotted owl.

Senator HATFIELD. You mentioned one or two, but I think one must look at this God Squad committee: the Secretary of Agriculture; the Secretary of Interior; the head of NOAA; the head of the EPA; a person to be appointed by the President from the affected states; the Secretary of the Army, if I did not mention that one; and the chairman of the Council of Economic Advisors—just to name a few.

I only raise the question at this moment because a lot of desperate people out there are looking, of course, for any or all options to deal with the horrendous economic impact that this can have. We were citing some numbers a while ago about employment, potential loss of employment. You can look at levels and so forth. But remember, each of those levels, we are talking about direct employment. Then, you consider the multiplier in terms of those other jobs related to the industry and then the next category of those who are dependent upon the industry or in part dependent upon the industry.

We can take 72,000, 72,000 direct jobs in Oregon. Another 144,000 related jobs, dependent jobs, another 270,000 related or semi-dependent jobs. So consequently you have got a huge multiplier and an average wage of $26,000. You are not talking about transferring people like that into the tourist industry at minimum wages.

So you know, there are all kinds of twists to these economic impacts. These can be just statistics to a lot of people, but I do say there are a lot of desperate people out there concerned about the future, not of an individual and an individual family alone, but the whole community.

I have recited many times, that I did the last high school commencement of Valsetts, Oregon. Most of the time those high school commencements are times of great celebration. But because Boise Cascade closed the mill, bulldozers came in a few weeks after that high school commencement and leveled what was left of that community, and there is no more Valsetts, Oregon. We have about 70 communities with that kind of situation, one or two mill economies.

So, again, we are talking about—and I know, Mr. Turner, you did imply that this is of provincial interest to me and my constituents. You refer to my constituents out there. When the Washington Post runs a story about this kind of a report and the implication—the impact of that report could raise housing costs across this country, then some of us who are fighting the homeless problem out here on this homeless front are concerned. You must realize that the fastest-growing population on the streets today of America are not the people being turned out of mental institutions, not the winos and the alcoholics that we think of so oftentimes as street people, but families with children. That is the fastest growing component of our homeless today.

When you realize it is people in the margin that are going to be pushed out more on the street in terms of increased housing costs, we are talking about a national, social impact far beyond the economics of jobs even for Oregonians or Washingtonians or Northern Californians.

The senators from every other state in the union say, well, that is your problem out there. I am not saying that they are not sympathetic, but I only need to repeat the fact that you can get an environmental vote very easily. I can cast an environmental vote very easily for emissions reductions of automobiles manufactured in Michigan because I do not have automobiles manufactured in Oregon, if I want to take a totally parochial view. And people in Michigan can vote to close up the forest in Oregon as an environmental vote, if it is presented as such and perceived as that. They do not have much impact; they already raped their country in the old days up there in Saginaw, which used to be the timber capital of America. So, they do not have that kind of interest maybe in timber production.

But I am talking now beyond the parochial regional interest that we all kind of represent from time, as we should. I am talking about a national social impact on this nation. I think we have to somehow begin to see this thing outside of this polarization that has occurred in my part of the country at least, as something of profits versus environmental.

It is a people issue that affects people in Connecticut, Massachusetts, New York and everywhere else in this country. When you talk about alternatives, what are the alternatives? Energy efficient alternatives? Or energy cost-effective? Metal? Mortar? As against a free solar-energy-driven resource that can be held in perpetuity.

I am putting my wind-up here. But I just want to say that I do not think that this is just a little region of the United States that we see on these maps as far as an environmental question.

It is an environmental issue and we pride ourselves in our state of being the leading state in the union on environmental legislation. We are not a bunch of reactionaries out there in Oregon who are exploiting our environment for profits.

We saw the rape coming across the northern tiered states and we put in conservation practices before it got to Oregon. By that time some of those same people turned into the best corporate citizens we have of growing a renewable resource. They got religion on the way west.

But at the same as we are environmentally concerned, we also comprise a state of people. I go to those mills. It is easy for, quote, "environmentalists" to sit around in Portland, and talk about preserving the ancient forest. Even after we have locked up 40 percent of our old growth already in our state by legislation that I have authored.

But you go down to Glendale, Oregon which is a single-mill community. You talk to 470 workmen there, and their wives and their children are saying, what are we going to do if this mill shuts down? They do not have a coal deck left down there, Mr. Turner. They are taking the logs off the truck, putting them into the operation. They have already lost one crew of people, that is one shift. Those are the things that we have to look at: the social impact. This is far beyond the economics. It is economics translated into people. That is all I am trying to say. It is something bigger than just my constituents and me.

Mr. **Turner**. Senator, could I respond just briefly? I think your comments are most appropriate.

Let me just say three things. One is, I did not mean to imply that the God Squad is not a viable option. I just meant to say that it is not a simple option. I think Congress meant it to be a viable one and there is probably a way.

Second, as a legislator from Wyoming for 20 years, I salute the State of Oregon because, in fact, we tried to follow your leadership on many measures.

And third, I know what you are saying about the people side of it because my home is a State that has watched an exodus of young people and watched communities close down. In fact, I chaired the committee in the legislature dealing with economic development for our State and tried to find new jobs and to address some of the hurt that Wyoming has been going through in the last three or four years.

That is why in this particular issue—my responsibility now, and I intend to follow it, is the conservation of fish and wildlife of this country. But it caused me plenty of agony at night and so forth because I watched what my State went through. I know it is the same concern. It, indeed, does have a national scope not just for the northwest, but national importance. I concur with that.

Senator **Hatfield**. I salute you, Mr. Turner. I have taken a very clear stand. I am not in any way wanting to set aside the Endangered Species Act. I helped write that Act. I helped get it through the Senate; I voted for that Act. I co-sponsored that Act. I am supportive of that Act. I want to support the preservation of the spotted owl; I am committed to that.

But at the same time, I still feel, going back to my opening statement, we have got to get all of the data into this action. That is what I think the Endangered Species Act triggers. It is not just the Thomas material, which is vital from the scientific point of view, but the economic and the social, not just regionally, but nationally.

I think when you get all that in, we are not going to eliminate all the purple (pointing to map), all that. We may eliminate very little purple. But when you put all those factors together, that purple is going to be modified in some way, in my view. That will be the ultimate if we are going to get a balanced plan.

When Dr. Thomas tells us that our basic commitments are on the Cascade Range, I am pleased to know that I think the Thomas Report indicates about 40 percent of the spotted owls are already protected under our wilderness legislation; is that not a correct——

But I believe that a major percent of the owl population identified in Oregon, a major part of that, I am not saying a majority, was listed as on the Cascade Range in areas that are already set aside under wilderness classification.

Dr. THOMAS. About 40 percent by acreage. I want to clarify. Ordinarily, that is higher elevation when we move into those wilderness areas and parks. Usually the density of occupation is not as high. It may not come out that way; but 40 percent of the acreage is in wilderness and parks.

Senator HATFIELD. 40 percent of the acreage. Well, that translates into at least a significant number of owls; does it not?

Dr. THOMAS. Yes.

Senator HATFIELD. I am pleased about that. At the same time we have to make a balanced plan.

I have one last question that I am going to pursue. I have a number of questions that I would like to submit to you, Mr. Jamison, to Mr. Robertson, Dr. Thomas as well as to Mr. Turner.

Mr. Turner, the Bull Run watershed; you may not have this on the tip of your tongue. If you do not, tell me and you can provide it for the record. The Bull Run watershed is the major supply for the City of Portland. It is in the Mt. Hood National Forest, up there on the right of the map. It was included in the Oregon HCA number 0-1 in the maps which accompanied the Thomas Plan. Now, the Bull Run is governed under Public Law 95-200. It is required to continue to supply clean and acceptable high-quality water for the Portland metropolitan area.

Now, in the Thomas Plan there is no provision for salvaging operations within the HCAs in general. So this would apply, I would assume, to the Bull Run watershed. The Forest Service, under Chief Robertson, and the City of Portland under its commissioned government, advocate such salvage operations as a means of maintaining Bull Run's water quality. With that, again a special, perhaps, case, which you referred to a while ago that we have to be flexible about, what would you suggest to allow for the protection of both the quality of that water and the owl?

Mr. TURNER. No, Mr. Chairman, but I will have to look into it specifically. Usually the type of habitat that I think we are talking about for protection of the viability of the owl, at least I have been told, correlates very nicely with protecting watersheds and the quality of water.

Senator **Hatfield**. I appreciate your presence here today. We will submit these questions that I have, along with questions from Senator McClure, Senator Wallop, and the governors of the three states for your consideration. We do not want to burden you, but certainly these are awfully important questions to be a part of the mix. I think they will be helpful to you.

Dr. Houston, you have been awfully silent, and I have not directed any questions to you. Do you have anything to get off your chest at this point?

Dr. **Houston**. No, I am fine. Thanks.

Senator **Hatfield**. I want to thank you and Dr. Thomas and Mr. Robertson.

We will now adjourn.

[Whereupon, at 5:25 p.m., the hearing was adjourned.]

[Subsequent to the hearing the subcommittee received the following:]

THE WILDLIFE SOCIETY
5410 Grosvenor Lane • Bethesda, MD 20814 • Tel. (301) 897-9770

29 May 1990

The Honorable Dale Bumpers, Chairman
Subcommittee on Public Lands, National Parks, and Forests
SD-308 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Chairman Bumpers:

The Wildlife Society urges you to support the recommendations of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl (Scientific Committee). The report is the result of the best scientific information available, and is a responsible and scientifically credible plan that should be implemented immediately.

The Wildlife Society is the scientific and educational association of more than 8,700 wildlife researchers, managers, educators, and administrators working in the public and private sectors to promote wise stewardship of natural resources. The Wildlife Society fully supports the recommendations of the Scientific Committee as expressed in their report, A Conservation Strategy for the Northern Spotted Owl, submitted on 4 April 1990.

The Committee found that timber harvesting activities make the northern spotted owl susceptible to extirpation from much of it's range in the absence of a comprehensive management plan to perpetuate spotted owl habitat.

The Spotted Owl Committee recommended the establishment of Spotted Owl Habitat Conservation Areas (HCA), rather than the insufficient Spotted Owl Habitat Areas (SOHA) approach currently used by the Forest Service and Bureau of Land Management. Because of past logging and fire history, SOHA's are most often irregular in shape, with younger patches of unsuitable habitat interspersed with suitable habitat. The result is fragmentation of owl habitat, which appears to have a deleterious effect on the spotted owl. The SOHA's were designed to encircle the approximate range of only one pair of spotted owls. They are too small and spaced too far apart for most dispersing juvenile owls to discover, and there are no requirements that the land between SOHA's be managed to maintain sufficient forest cover to provide protection to dispersing spotted owls. The SOHA approach is greatly flawed in it's ability to maintain the viability of spotted owls, and does not measurably improve any of the problems facing declining spotted owl populations.

In contrast to the system of SOHA's, the Spotted Owl Habitat Conservation Areas (HCA) are to be within 12 miles of each other, the average distance traveled by banded spotted owls and by two-thirds of the owls fitted with radio transmitters, and usually encompass the home ranges of an optimal 20 pairs of owls. The HCA approach also conserves large blocks of less fragmented habitat, and takes into account that a species that is well distributed across it's range will be less prone to extinction than a species confined to small portions of it's range. The HCA guidelines require that the forests between HCA's are managed with an 80 year rotation schedule, so that at all times, 50% of the lands between HCA's have at least 40% forest canopy closure and trees with diameters of 11 inches or more. Management following these guidelines enhances the probability of successful dispersal by juvenile owls. Implementation of this strategy combined with the other aspects of the Spotted Owl Committee's plan will maintain the viability of spotted owl populations over the next century.

In developing the conservation strategy for the northern spotted owl, the Scientific Committee minimized the removal of land from the timber base while meeting their charge to develop a scientifically credible strategy for conserving the spotted owl. Any decrease in implementing the prescribed measures to conserve the spotted owl greatly increase the threat to the bird. The Wildlife Society accepts this strategy as the best available method for conserving the northern spotted owl, and urges you to implement the Spotted Owl Committee's conservation strategy immediately.

Thank you for considering the views of the wildlife management profession.

Sincerely,

Harry E. Hodgdon

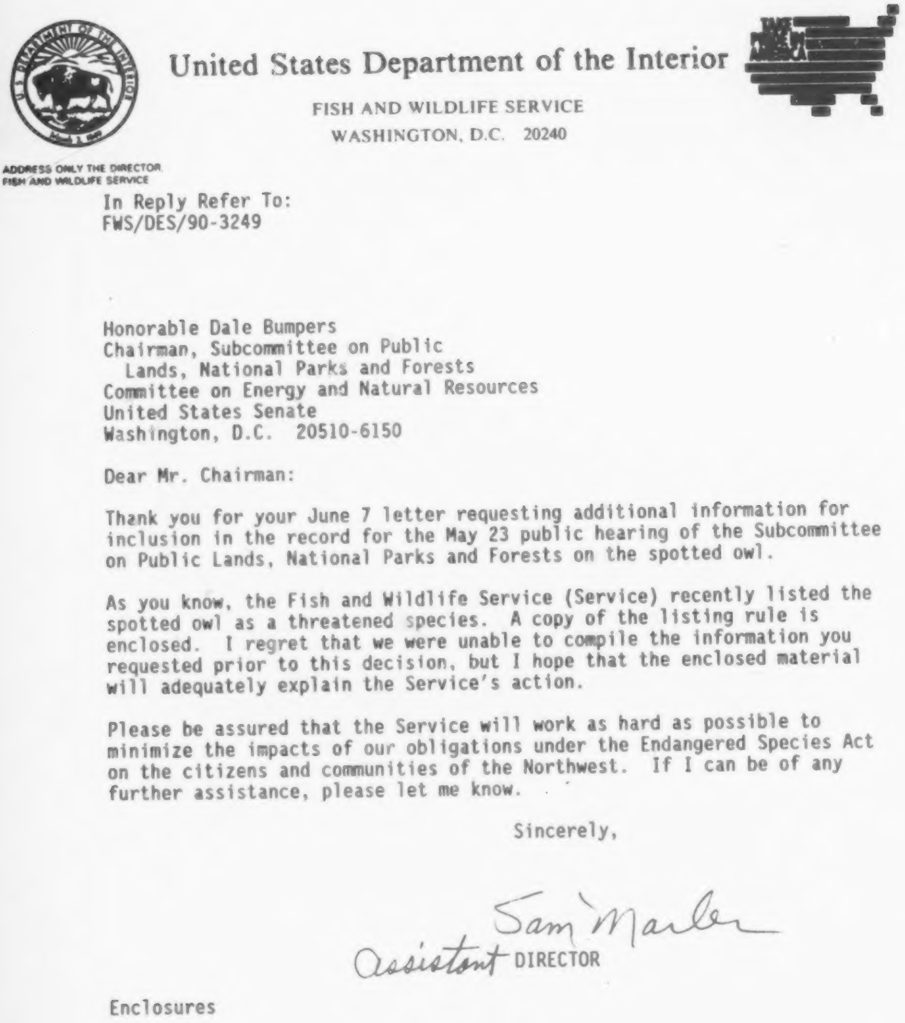
Harry E. Hodgdon
Executive Director

oc: The Honorable Timothy E. Wirth
The Honorable Malcolm Wallop

cc: The Honorable Bill Bradley
The Honorable Jeff Bingaman
The Honorable Kent Conrad
The Honorable John D. Rockefeller IV
The Honorable Mark O. Hatfield
The Honorable Conrad Burns
The Honorable Jake Garn
The Honorable Pete V. Domenici

APPENDIX

Responses to Additional Questions



United States Department of the Interior
FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR
FISH AND WILDLIFE SERVICE

In Reply Refer To:
FWS/DES/90-3249

Honorable Dale Bumpers
Chairman, Subcommittee on Public
  Lands, National Parks and Forests
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510-6150

Dear Mr. Chairman:

Thank you for your June 7 letter requesting additional information for inclusion in the record for the May 23 public hearing of the Subcommittee on Public Lands, National Parks and Forests on the spotted owl.

As you know, the Fish and Wildlife Service (Service) recently listed the spotted owl as a threatened species. A copy of the listing rule is enclosed. I regret that we were unable to compile the information you requested prior to this decision, but I hope that the enclosed material will adequately explain the Service's action.

Please be assured that the Service will work as hard as possible to minimize the impacts of our obligations under the Endangered Species Act on the citizens and communities of the Northwest. If I can be of any further assistance, please let me know.

Sincerely,

Sam Marler
Assistant DIRECTOR

Enclosures

ANSWERS TO QUESTIONS SUBMITTED BY SENATOR BUMPERS

1. When do you expect to release your decision regarding listing the spotted owl under the Endangered Species Act?

   The decision to list the northern spotted owl as a threatened species was announced on June 22, 1990. Because the proposal to list the owl as a threatened species was published on June 23, 1989, the deadline for final action on the proposal was June 23, 1990.

2. Can you give the Subcommittee a preliminary indication of whether you expect the owl would be listed?

   The Fish and Wildlife Service (Service) generally prefers not to speculate on pending listing actions prior to a final decision.

3. How would listing change Federal management of lands containing spotted owls or their habitat? What obligations would the land managing agencies be under to protect the owl and the habitat of the owl?

   Federal agencies are required to ensure that their actions are not likely to jeopardize the continued existence of any listed species. To determine whether or not jeopardy would occur, each Federal agency is required to consult with the Service prior to making any irretrievable or irreversible commitments of resources for any project. For example, the Forest Service and Bureau of Land Management will be required to consult with the Service on their timber sale activities in spotted owl habitat. These agencies will have to take Endangered Species Act requirements into account during their project planning process to ensure that they do not violate either section 7 or section 9 of the Act.

4. If the owl is listed, will the Thomas report serve as the recovery plan? If not, then what are your plans for preparation of a recovery plan? Will it necessitate full recovery? How long will it take? Will other agencies be involved? What responsibility do the Federal agencies have to follow the recovery plan?

   The Thomas report represents the most current thinking with regard to the management of spotted owls, and was developed by the most knowledgeable experts on the subject. Now that the listing decision has been made, the Service intends to consider the applicability of the Thomas report as a recovery plan under the Act and to determine whether implementation of that report will result in full recovery. The Service will proceed with that review at the earliest possible time, and plans to make a preliminary determination on its recovery planning intentions by late summer of 1990.

A recovery plan is intended to identify the goals and objectives that the Service believes necessary to recover a species, but it carries no regulatory requirement for any landowner. In developing a recovery plan, the Service considers what is biologically and economically feasible as well as what may be necessary to delist the species. Public participation in the recovery planning process is required by section 4(f)(4) of the Endangered Species Act. The Service always includes Federal, State, and major private interest groups in recovery planning discussions. I would expect other agencies to be involved in development of the recovery plan, as they were in the interagency scientific committee. While agencies are not required to accept or adopt the strategies in a recovery plan, I hope to see a plan that can be accepted by all persons and organizations involved and implemented in a cooperative manner.

5. Given the contentiousness the "consultation" and "jeopardy" provisions of the Endangered Species Act have met with in the past, do you anticipate that listing opens the door for almost every timber sale in owl habitat to be legally challenged?

Consultation under section 7 of the Act is not generally a contentious process. Although listing indicates that there is a problem with a species, it does not mean that there are not successful ways of handling consultation that result in protection of a listed species while avoiding conflicts with development. The Service has conducted over 40,000 consultations on other listed species and has been very successful in finding acceptable ways to meet its obligations under the Act while avoiding major impacts on other Federal activities. I would hope that any biological opinion provided by the Service as the outcome of a consultation on the owl would be sufficiently well-founded to withstand a legal challenge. I cannot, however, tell you that there will be no such challenges.

ANSWERS TO QUESTIONS SUBMITTED BY SENATOR HATFIELD

1. It has come to my attention that the Administration is considering making a listing decision prior to June 23rd. What are the advantages of making this decision before the one-year deadline? What are the disadvantages?

   I think that there is generally an advantage to moving from a position of uncertainty in a matter such as this to one of greater certainty as soon as the necessary information is available. Given the complexity of this issue, however, it was not possible to make a decision significantly before the deadline.

2. If the owl is indeed listed on or before June 23rd, is there a mechanism available to work with the Forest Service and the BLM to achieve an economically viable timber sale level for FY 1991? Mr. Turner, give us a picture of the post-listing process. What needs to happen?

   In anticipation of the listing of the northern spotted owl, the Forest Service and Bureau of Land Management asked the Service to develop procedures for handling section 7 consultation, recovery planning, and other requirements of the Endangered Species Act. The Service has been extremely successful in working with these two agencies to develop an approach that is compatible with their other mandates and that will not result in a slowdown of timber sale activities due to Endangered Species Act compliance. A copy of that guidance is provided for your consideration. The Service believes very strongly that there are mechanisms in place under the Act that are workable; our people are committed to doing an efficient and effective job that will be responsive to the needs of the public.

3. Has the Fish and Wildlife Service established consultation guidelines to review timber sales if the owl is listed? What information do you require from the Forest Service and BLM to conduct these consultations?

   As noted above, consultation guidelines have been developed to expedite the section 7 consultation process and to avoid any slowdown in agency timber sale programs due to the Endangered Species Act. Information needs to successfully complete consultation have been worked out with the agencies and should not cause a problem (see attached guidelines).

4. Please describe the differences between the informal conferencing process established in 1989 and formal section 7 consultation.

   There are very few differences in the type of information necessary to conduct section 7 conferencing or consultation. There are differences however, between the two processes in the types of analyses for which the Service is responsible; thus, the Service will be required to revisit the actions previously reviewed in conference (e.g., sales subject to section 318 of the 1990 Appropriation Act). To complete this process, the Service will need an update on the status of the timber sales previously reviewed as well as information to help the

Service conclude a cumulative-effects analysis of the agencies' timber sale programs. However, there should be very little delay in completing the reviews of timber sales already reviewed through the conferencing process. The Service and the agencies have already identified the necessary information and are proceeding with collection and analysis of these data.

5. Does the Fish and Wildlife Service have all necessary information to establish critical habitat if a listing occurs? If not, what additional information do you require in order to identify these areas?

   The Service has 2 years from the date of the listing proposal to conclude its determination on whether or not to designate critical habitat. At the time of the proposal, the Service found that the information then available was insufficient to determine critical habitat, and thus none was proposed. Now that the owl is listed, the Service will proceed quickly to determine whether or not critical habitat should and can be designated. If a proposal to designate critical habitat were to be developed, the Service would be required to conduct an economic analysis of the effects of such a designation. The information necessary to conduct such an analysis is not currently available.

6. What timeline do you envision for the development of a recovery plan, including the identification of critical habitat areas?

   Recovery planning and the identification of critical habitat are independent processes, and the Service is required to develop a recovery plan whether or not critical habitat has been identified. The Service will proceed as rapidly as possible to develop a recovery plan. In doing so, it will closely review the Thomas report to determine its applicability. A strategy and timetable for accomplishing this are described in the attached set of guidelines.

7. Would you explain the process for securing an economic exemption for proposed Federal actions under the Endangered Species Committee? Please define for us just what an "action" is that might be under review by the God Squad. Would it be a timber sale? Road construction? A timber sale contract?

   Section 7 of the Endangered Species Act prohibits any Federal agency from authorizing, funding, or carrying out an action that is likely to jeopardize the continued existence of an endangered or threatened species. A Federal agency, the Governor of a State, or a permit or license applicant may apply for an exemption from this requirement for a given action. Such an exemption can be granted by the Endangered Species Committee, which is convened if an application for exemption is accepted by the Secretary of the Interior for consideration. The committee has seven members:

1. Secretary of Agriculture,
2. Secretary of the Army,
3. Secretary of the Interior,
4. Chairman of the Council of Economic Advisors,
5. Administrator of the National Oceanic and Atmospheric Administration,
6. Administrator of the Environmental Protection Agency, and
7. an individual nominated by the affected State(s) and appointed by the President to serve on the committee.

In order to be accepted for consideration by the committee, an application must satisfy the following conditions:

1. Consultation has been carried out in good faith and modifications of the action that would avoid jeopardy have been fairly considered.
2. A biological assessment has been performed in connection with the action to identify endangered or threatened species that may be affected by it.

The committee grants an exemption if at least five of its members agree that the following conditions are met:

1. There are no reasonable and prudent alternatives to the action under consideration.
2. The benefits of the action clearly outweigh the benefits of alternatives that would avoid jeopardy, and the action is in the public interest.
3. The action is of regional or national significance.
4. No irreversible or irretrievable commitment of resources has been made subsequent to initiation of consultation that would foreclose project modifications that could avoid jeopardy.

The exemption process is subject to limitations that may not be generally understood. An exemption can apply only to a Federal action that would otherwise be prohibited from going forward because of the "jeopardy" provision of section 7 of the Act; exemptions are not available to cover all actions that would affect a given species. Exemption may be sought only for a Federal action on which there has been consultation under section 7 of the Endangered Species Act that resulted in a jeopardy opinion.

For an action affecting the owl to be considered by the Committee, the action would have to have been found to jeopardize the owl and to have no reasonable and prudent alternatives. It is unlikely that an individual timber sale or the construction of a road would ever satisfy these conditions for a threatened species. It is conceivable, however, that implementation of a management plan at the level of a District, Forest, State, or Region could become subject to the Committee's jurisdiction.

8. If a State has a recovery plan developed under a State ESA, is it possible to determine that the State plan is (or is not) adequate to meet Federal ESA requirements? On what basis will the determination be made? What criteria will be used to make the determination? If differences exist, how are those potential conflicts resolved? Can regulatory programs administered by other than the State's fish and/or wildlife agency qualify as the protective mechanism under the ESA?

   The Service has the ultimate responsibility to determine what is necessary to recover a species. However, in developing a recovery plan, the Service takes into account any other plans that may exist. In addition, States are full participants in any discussions leading to development of a recovery plan. Similar consideration is given to State regulations that provide protection to listed species.

9. In the Thomas report, there is a clear commitment to the testing of alternative silvicultural prescriptions that could potentially allow for northern spotted owl protection and timber harvest near nest sites and within home range territories. What plans does the Service have to implement this testing program? Will this testing be part of the recovery plan developed should the northern spotted owl be listed under the ESA?

   The Service will fully consider the Thomas report for its applicability as a recovery plan. The recommendations made in the Thomas report may provide a good basis for initiating research on actions that may be compatible with the owl as well as those that may lead to its recovery. The Service encourages the testing of any of these activities as quickly as possible by timber managers. Because the Service does not manage owl habitat, it has no plans to directly implement any testing regime.

(Questions submitted on behalf of Governor Deukmejian)

10. When does habitat alteration by harvesting on private lands in California constitute "taking" under the Endangered Species Act? Similarly, how much can habitat be altered before it is considered degraded?

    Alteration of any existing suitable spotted owl habitat could affect the owl, but the degree to which that would result in a taking under section 9 of the Act is more difficult to determine. The Service is working on a process to determine whether taking may be a problem on any land ownership. The Service is fully aware of the potential problems for private land owners, and will be pleased to work closely with them in avoiding conflicts with the law. The process that is being worked out through the State Resources Agency provides the best opportunity for handling this issue.

(Questions submitted on behalf of Governor Gardner)

11. Does the Endangered Species Act give the Service authority to regulate management practices on lands that currently do not provide habitat for a listed species?

The prohibitions of the Endangered Species Act do not apply to habitat management outside the normal range of a listed species, but they do apply to suitable, unoccupied habitat within its historical range. Lands that would not be considered suitable habitat for a listed species (such as farm land) would generally not be subject to restrictions under the Act.

The northern spotted owl is a forest ecosystem species that is found throughout the Northwest in forests of varying age classes. Actions within forest habitat would be considered as having the potential to affect the owl and therefore would be subject to the Act.

12. Enforcement and management responsibilities under the endangered species program are likely to increase dramatically with the potential listing of the northern spotted owl and recent petition for a number of other wildlife species, notably the fisher and pine marten in the Pacific Northwest. What plans does the Service have to meet these responsibilities and needs?

The Service believes that it can meet these responsibilities and obligations if it has the support of the public and is able to obtain cooperation from those who are involved in these issues. The Thomas report offers a first step in addressing forest ecosystem issues in the Northwest. Although it is not clear what benefits to other species may be provided by the strategy outlined in the report, it does provide a starting place. The Service would like to see representatives of major interest groups (public and private) become more closely involved in addressing the larger issues.

A forum for addressing these issues already exists through the interagency agreement recently signed by the Federal and State agencies involved with the northern spotted owl. Using that group and the interagency mechanism recommended by the Thomas report could provide a method for beginning to address some of these issues. I hope that this process may be used in reviewing the Thomas report to determine its applicability as a recovery plan and its value to other forest ecosystem (and old growth) species.

13. If the owl is listed on June 23, is the ISC strategy adequate as a recovery plan?

The Service intends to consider the applicability of the strategy outlined in the Thomas report as a recovery plan and to determine whether implementation of the strategy would be likely to promote full recovery. The Service will proceed with that review at the earliest possible time and expects to have a preliminary determination on recovery planning intentions by late summer.

14. The long term social and economic impacts of implementing the conservation plan are still poorly understood. Is it reasonable to implement the plan before we fully understand the consequences?

The Thomas report provides a sound biological basis for managing the owl on a range-wide basis, and offers considerably more protection than previous plans. In addition, it may offer benefits to many other forest ecosystem species, thus helping in the long run to avoid future conflicts with other species. Potential ecological problems resulting from the manner in which timber is harvested have been identified. It is not clear how much time remains for us all to rectify the effects of that activity before other problems arise.

It is the Service's hope that a process can be developed to resolve issues related to the owl (as well as other old growth issues) that would not result in drastic economic impacts to local communities or the States. With cooperation and strong leadership, we should be able to work together to everyone's long-term benefit.

(Questions submitted on behalf of the Oregon Forest Industries Council)

15. If the northern spotted owl is listed as a Federal T and E species, and if the recommended recovery plan is identical or similar to the recommendations of the ISC, how will your agency define "taking?" What will your policy be on habitat preservation under such a scenario? Whatever that policy would be, would you require or recommend that it be enforced on private land in the same manner as it would be enforced on public land?

As noted in the response to question 10 above, the degree to which alteration of any existing suitable spotted owl habitat would constitute taking under section 9 of the Act is difficult to determine. The process being worked out through the State Resources Agency in California and being discussed in Oregon and Washington provides the best opportunity for handling this issue.

The type of plan that is proposed for managing spotted owls would not affect the prohibition against taking. However, a plan would offer an opportunity to minimize or avoid take, and thus could serve as a basis for a permit system to allow timber harvest activities resulting in incidental take. Landowners concerned over the potential for incidental take are encouraged to discuss their concerns directly with the Service. If an incidental taking permit is required, the Service will work closely with an applicant to develop an acceptable plan.

ANSWERS TO QUESTIONS SUBMITTED BY THE OREGON FORESTRY DEPARTMENT

1. If the northern spotted owl is listed under the Endangered Species Act, and no critical habitat is designated at the time of listing, what regulations under the Act, if any, apply to timber harvest activities on private lands? On State-owned lands?

   Taking of listed wildlife species is generally prohibited under section 9 of the Endangered Species Act on all lands, including Federal, State, and private lands. A critical habitat designation is not related to this taking prohibition. The Act provides a permitting process to allow take that is incidental to otherwise lawful activities, such as timber harvesting, if the permit applicant develops a habitat conservation plan that reduces or minimizes the effects of the taking on the species.

2. If critical habitat on privately-owned land is designated in the listing decision, what regulations apply to timber harvest on those lands? On State-owned lands?

   Section 9 prohibitions against taking apply on all public and private lands regardless of a designation of critical habitat.

3. If a recovery plan is adopted by the Service under the Act that includes private lands, what regulations can be imposed on timber harvesting? On State-owned lands?

   A recovery plan is intended to identify the goals and objectives that the Service believes are necessary to recover a species. Such a plan, however, carries no regulatory requirement for any landowner.

4. If a State has a recovery plan developed under a State ESA, is it possible to determine that the State plan is (or is not) adequate to meet Federal ESA requirements? On what basis will the determination be made? What criteria will be used to make the determination? If differences exist, how are those potential conflicts resolved? Can regulatory programs administered by other than the State's fish and/or wildlife agency qualify as the protective mechanism under the ESA?

   The Service has the ultimate responsibility for developing a recovery plan, but it takes into account any other plans and regulations that may exist. States also are invited to participate in the Service's recovery planning process.

5. In the Thomas report, there is a clear commitment to the testing of alternative silvicultural prescriptions that could potentially allow for northern spotted owl protection and timber harvest near nest sites and within home range territories. What plans does the Service have to implement this testing program? Will this testing be part of the recovery plan developed should the northern spotted owl be listed under the ESA?

The recommendations made in the Thomas report may provide a good starting place for initiating research to determine the types of actions that may be compatible with the owl, as well as those that may lead to its recovery. The Service encourages the testing of any of these activities as quickly as possible. Because it does not manage owl habitat, the Service has no plan to implement an experimental management regime.

ANSWER TO QUESTION SUBMITTED BY SENATOR ADAMS

1. I understand the Service reopened the listing comment period in order to include the Jack Ward Thomas Committee recommendations. Does the Service consider the Thomas report to be solely a biological recommendation? How will the Service view the Thomas report?

   The Thomas report was not a biological recommendation on the listing of the owl. However, it did contain the latest review of the information gathered and analyzed by the most knowledgeable owl experts. In addition, the Service was part of a four-agency group that chartered the Thomas committee to develop a conservation strategy. The Service, therefore, did not believe that it could ignore the results of that committee effort in its listing process, especially since the committee completed its efforts prior to completion of the listing review process.

PROCEDURES LEADING TO ENDANGERED SPECIES ACT COMPLIANCE FOR THE NORTHERN SPOTTED OWL

Including:

o Formal Section 7 Consultation Guidance
o Interim Recovery Strategy
o Conservation Planning for Non-Federal Actions
o Guidance for Incidental Take

U.S. Fish and Wildlife Service
Region 1
July 1990

This document was prepared by the U.S. Fish and Wildlife Service in Region 1, Portland, Oregon. For further information, please contact the following offices:

Mr. Wayne White, Field Supervisor
Fish and Wildlife Enhancement Field Station
U.S. Fish and Wildlife Service
2500 Cottage Way, Rm E-1823
Sacramento, California
FTS 460-4613 or 916-978-4613

Mr. Russ Peterson, Field Supervisor
Fish and Wildlife Enhancement Field Station
U.S. Fish and Wildlife Service
2600 SE 98th Ave.
Portland, Oregon 97266
FTS 429-6179 or 503-231-6179

Mr. Dave Fredrick, Field Supervisor
Fish and Wildlife Enhancement Field Station
U.S. Fish and Wildlife Service
Bldg. A, 2625 Parkmont Lane
Olympia, Washington 98502
FTS 434-9440 or 206-753-9440

Mr. Doug Smithey, Coordinator
Habitat Conservation Planning
U.S. Fish and Wildlife Service
1002 NE Holladay St.
Portland, Oregon 97232
FTS 429-6159 or 503-231-6159

Mr. Barry Mulder, Coordinator
Spotted Owl Program
U.S. Fish and Wildlife Service
1002 NE Holladay St.
Portland, Oregon 97232
FTS 429-6730 or 503-231-6730

TABLE OF CONTENTS

INDEX

Introduction.....1

Purposes.....1

Background.....1

Section 7 -- Formal Consultation for Federal Actions.....1
Sections 9 and 10 -- Take for Non-Federal Actions.....2
Section 4 -- Recovery Strategy.....3

Discussion and Examples.....3

Formal Consultation under Section 7.....3
Incidental Take Guidelines under Sections 7 and 10.....9
Habitat Conservation Planning under Sections 9 and 10.....12
Recovery Planning under Section 4.....14

Conclusion.....15

TABLES

Table 1: Examples of Reasonable and Prudent Measures Under Consideration in Incidental Take Statements for Federal Actions as Well as Applicable Conservation Recommendations.....6

Table 2: Calculations to Develop Incidental Take Guidelines Based upon Home Range Size by Physiographic Province.....11

APPENDICES

Appendix 1: Biological Assessment Information.....1
Appendix 2: Biological Opinion Format.....5
Appendix 3A: Example Conservation Recommendations Under Consideration if the ISC Strategy serves as basis for Section 7 Consultation.....6
3B: Example Conservation Recommendations under Consideration if the ISC Strategy does not serve as the basis for Consultation.....8
Appendix 4: Recovery Strategy.....11
Appendix 5: Interagency Agreement 1990.....12

OWL PROCEDURES MANUAL

INTRODUCTION

With a listing decision now made for the northern spotted owl and an effective date of July 23, 1990, many people are wondering exactly what changes may occur to timber harvest programs in order to adequately protect the owl. In this document, the U.S. Fish and Wildlife Service (Service) describes its consultation, recovery, law enforcement (taking) guidelines, and conservation planning processes in an attempt to lay out procedures that are consistent with provisions of the Endangered Species Act (ESA), applicable on the effective date for listing of the northern spotted owl. With the cooperation of the other Federal agencies, as well as State and private entities, these guidelines outline the most efficient way of doing business under the ESA, at least for the first year after a listing, and would help meet the goals of other applicable laws and regulations.

PURPOSES

1. To provide clear examples of how ESA processes may work for the spotted owl.
2. To provide clarification of the Service's view of the Interagency Scientific Committee's (ISC) conservation strategy.
3. To put ESA spotted owl guidance in an understandable, manual-type format for distribution to Federal and non-Federal sectors as a working document.

BACKGROUND

o SECTION 7 OF THE ESA -- FORMAL CONSULTATION FOR FEDERAL ACTIONS

Federal agencies that fund, authorize, or carry out actions which "may affect" listed species must consult with the Service under Section 7. Federal actions that are nondiscretionary or that have "no adverse effects" on listed species are not subject to formal consultation. For timber harvest activities, the "may affect" standard applies to harvest activities within suitable owl habitat, as well as any harvest activities within a 1/2 mile radius of any known nest site or pair activity center. The Service believes that these actions represent a threshold standard for timber activities requiring formal Section 7 consultation.

Formal consultation always results in a biological opinion issued from the Service to the action agency. The opinion always makes a "likely to jeopardize" or "not likely to jeopardize" finding for the action subject to formal consultation. The finding takes into account the environmental baseline condition of the listed species, plus the direct, indirect, interrelated, and interdependent effects attributable to the Federal action at hand, together with the cumulative effects of State and private actions reasonably certain to occur in the area of the Federal action.

Biological opinions may contain suggestions for project/action modifications, ranging from reasonable and prudent alternatives (only in a "jeopardy opinion") to reasonable and prudent measures/terms and conditions (mandatory elements of an incidental take statement) to conservation recommendations (suggestions which are left to the discretion of the action agency to implement).

Standards for the determination of incidental take are of particular significance to any future biological opinions for the northern spotted owl. Incidental take of listed species is "take" (as defined by the Endangered Species Act) that occurs incidentally to otherwise lawful activities. An obvious example of incidental take would be unknowingly cutting a tree which contained an owl nest with eggs or young.

The Service believes that incidental take also occurs for timber harvest activities which may harm or harass northern spotted owls. In order to define such activities which result in the most subtle types of incidental take, the Service convened a group of its biologists and developed incidental take guidelines which consider the biology of the owl throughout its range. Such guidelines are described later in this document.

o SECTIONS 9 AND 10 OF THE ESA -- TAKE FOR NON-FEDERAL ACTIONS

Take of endangered or threatened species is prohibited under Section 9 of the Endangered Species Act. The 1982 Amendments to the ESA gave the Service a procedure to authorize the incidental take of listed species by non-Federal parties in much the same way a Section 7 consultation (Incidental Take Statement) can authorize incidental take for Federal actions. Private parties whose otherwise lawful actions will result in incidental take of a listed species can apply for a permit authorizing such take by submitting a permit application and a Habitat Conservation Plan (HCP) to the Service.

Conservation Planning is a term that generally refers to the Section 10(a)(1)(B) permit process. This manual will go through the general procedures necessary for a private party to submit a properly prepared permit application for processing.

o SECTION 4 OF THE ESA -- RECOVERY STRATEGY

The Service will ultimately have an approved recovery plan for every listed species, as set forth in Section 4 of the ESA. Right now, there are approved recovery plans for less than one-half of all listed species. Recovery plans set forth goals which, once achieved, can result in delisting the subject species.

An approved recovery plan is not necessary to carry out formal consultation under Section 7, to consider permit applications under Section 10, nor to enforce the prohibitions of "take" under Section 9. Nevertheless, recovery plans are useful planning tools and may help guide and coordinate all conservation gained through Section 7 and Section 10, and focus such conservation actions on recovery and delisting. This manual will focus on the existing knowledge available, especially the ISC report, and make suggestions as to how the agencies can utilize such information as a potential recovery strategy.

DISCUSSION AND EXAMPLES

o FORMAL CONSULTATION UNDER SECTION 7

It is the responsibility of the action agency (e.g., Forest Service and Bureau of Land Management) to determine which actions "may affect" threatened or endangered species, and to initiate consultation with the Service. As noted above, "may affect" situations for the owl are defined as those activities that involve harvest or related activities within spotted owl habitat, and/or harvest activities which may pose disturbances to nesting pairs within 1/2 mile of any known nest site or pair activity center, regardless of the suitability of the habitat.

Suitable habitat selected by northern spotted owls was described in the (ISC) conservation strategy as typically exhibiting ". . . moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large cavities, broken tops, and other indications of decadence; numerous large snags; heavy accumulations of logs and other woody debris on the forest floor; and considerable open space within and beneath the canopy. These attributes are usually found in old growth, but they are sometimes found in younger forests, especially those that contain remnant large trees or patches of large trees from earlier stands. In younger forests that support breeding owls, the nest and major roost sites are usually found where large trees from the earlier, older stands remain." It is important to note that the age of forests is not as important a factor in determining habitat suitability as are vegetational and structural components. Areas where consideration of spotted owl habitat may be especially important in consultation are: 1) habitat that is currently occupied by owls, 2) Habitat Conservation Areas as defined in the ISC conservation strategy, and 3) areas of special concern as defined in the Service's 1989 Status Review Supplement.

Once the action agency has made the "may affect" determination, a written request should be made to the Service for formal consultation. This request should be accompanied by an assessment of the action and its impacts, and contain the following general categories of information (a more detailed outline for a biological assessment is provided in Appendix 1):

1. a description of the action to be considered;
2. a description of the specific area that may be affected by the action;
3. a description of any listed species or critical habitat that may be affected by the action;
4. a description of the manner in which the action may affect any listed species or critical habitat and an analysis of any cumulative effects;
5. relevant reports, including any environmental impact statement or environmental assessment; and
6. any other relevant available information on the action, the affected listed species, or critical habitat.

After review of this information, the Service then prepares a biological opinion which includes:

1. an analysis of the direct and indirect effects, as well as the effects of interrelated and interdependent activities, and cumulative effects of reasonably certain State or private activities in the action area;
2. a biological opinion on whether the action is "likely to jeopardize" or "not likely to jeopardize" the continued existence of the species (reasonable and prudent alternatives will generally be provided if the opinion indicates that the proposed action is likely to jeopardize the continued existence of the species);
3. an incidental take statement which will identify the anticipated level of incidental take that will occur, and provide reasonable and prudent measures and terms and conditions for minimizing incidental take; and
4. conservation recommendations that, if implemented, would minimize impacts and promote the conservation of the species.

Reasonable and prudent measures and terms and conditions to minimize incidental take are mandatory, as are reasonable and prudent alternatives in a jeopardy opinion, and should be carried out by the action agency. Implementation of conservation recommendations, although strongly encouraged by the Service, is at the discretion of the action agency. A general outline for biological opinions is shown in Appendix 2.

The Forest Service and Bureau of Land Management (BLM) are considering dividing their sales into 3 categories for purposes of formal consultation:

1. all sold sales sold prior to FY-89;
2. planned and sold sales for FY-89 and 90 (Section 318 sales, and sales previously in conference); and
3. FY-91 planned sales.

Each Federal action "package" will result in a separate biological opinion issued by the Service to the Forest Service and the BLM (assuming both action agencies utilize similar consultation "packaging"). The Service is committed to issuing biological opinions on categories 1 and 2 within 30 days of receipt of the additional information necessary to complete the administrative record (and as close as possible to any effective date of a listing).

In each biological opinion the Service would provide conservation recommendations and an Incidental Take Statement (where appropriate) based on the Interagency Cooperation Regulations found at 50 CFR Part 402. To display possible results from such opinions, and assuming the occurrence of incidental take, we have prepared a list of examples of reasonable and prudent measures that would minimize or avoid incidental take, and listed conservation recommendations that are applicable to incidental take (see Table 1). We have further divided the list into two parts. Measures and recommendations that are (1) based upon the ISC Conservation Strategy or (2) based upon current management plans. Departure from these "example" reasonable and prudent measures and conservation recommendations may be advised, if through coordination with the Service, it is determined that sound biological data and reasoning indicate that the species would benefit from such a departure.

Appendices 3A and 3B provide examples of possible conservation recommendations, applicable under Section 7(a)(1), that may further promote the conservation of the species. Similarly, the first list (Appendix 3A) is based upon the ISC Conservation Strategy, while the second (Appendix 3B) is based upon current management direction. These recommendations are not mandatory and are intended to provide an opportunity for the agency to further the conservation of the owl.

Comparisons between timber harvest actions "with ISC Strategy" and "without" were made at the request of the Department of the Interior. At the time of this writing, there are no other conservation strategies developed and presented for similar comparisons. If appropriate, future versions of this manual may analyze the likely conservation actions that would be called for under Section 7 if other, yet unknown, strategies were considered.

In the meantime, the ISC Conservation Strategy represents the most current management advice, developed through a multiagency working group that included the most knowledgeable owl experts. The strategy provides a long-term approach to owl management, consisting of major elements, that in combination comprise an integrated approach to conservation of the species. Deviations from the strategy in the short-term increase risk to its long-term success. Thus, the strategy provides a conservation goal against which all future actions will need to be measured. Since the strategy acknowledges the loss of habitat in conservation areas only through the 1990 sale program, it may be necessary to prepare a new or updated conservation strategy if the ISC's recommendations are not implemented in full prior to contracting 1991 sales.

Table 1. Examples of Reasonable and Prudent Measures Under Conservation in Incidental Take Statements for Federal Actions as Well as Applicable Conservation Recommendations

Reasonable and Prudent Measures and Conservation Recommendations Related to Incidental Take

Sales Type	Limitations on Reasonable and Prudent Measures and Conservation Recommendations	Basis: Current Agency Management Plan Scenario	Basis: Agency Implementation of Interagency Scientific Committee Report
Sold Sales (pre-89 and FY-89/90 sold sales including sales under Section 318)	Sales are under contract, expense is high to modify contract.	Reasonable and Prudent Measures: Implement restrictions during the nesting season to protect pairs of spotted owls and their progeny. Conservation Recommendations: Protect pairs of spotted owls by adjusting unit boundaries, providing buffers, and use of forest practices which provide spotted owl habitat components.	Reasonable and Prudent Measures: Implement restrictions during the nesting season to protect pairs of spotted owls and their progeny. Conservation Recommendations: Protect pairs of spotted owls by adjusting unit boundaries, providing buffers, and use of forest practices which provide spotted owl habitat components.

(continued)

Sales Type	Limitations on Reasonable and Prudent Measures and Conservation Recommendations	Basis: Current Agency Management Plan Scenario	Basis: Agency Implementation of Interagency Scientific Committee Report
1990 Planned but Unsold Sales, including Sales proposed under Section 318	Limited time available to make adjustments during the planning process and coordinate the changes before fiscal year 1990 contracting deadlines. Additional expenses may be necessary to make changes.	Reasonable and Prudent Measures: Maintain adequate habitat within close proximity of pair sites and within their home ranges until a long-term conservation strategy is adopted. (See page 9, section on Incidental Take Guidelines under Sections 7 and 10.)	Reasonable and Prudent Measures: Protect pairs of spotted owls within HCAs by providing a 1/2 mile buffer around the pairs activity center. Outside HCAs protect 80 acres surrounding pair activity centers (as specified in the ISC Strategy).
			Implement seasonal restrictions during the nesting season to protect pairs of spotted owls and their progeny.
		Conservation Recommendations: Adopt the Interagency Scientific Committee Conservation Strategy, and eliminate or relocate timber harvest activities to areas outside proposed HCAs.	Conservation Recommendations: Eliminate or relocate timber harvest to areas outside HCAs.

(continued)

Sales Type	Limitations on Reasonable and Prudent Measures and Conservation Recommendations	Basis: Current Agency Management Plan Scenario	Basis: Agency Implementation of Interagency Scientific Committee Report
1991 and Future Sales	No known limitations	Reasonable and Prudent Measures: Maintain adequate habitat within close proximity of pair sites and within their home ranges until a long-term conservation strategy is adopted. (See page 9, section on Incidental Take Guidelines under Sections 7 and 10.)	Reasonable and Prudent Measures: Implement restrictions during the nesting season to protect pairs of spotted owls and their progeny that are located outside HCAs.
		Conservation Recommendations: Adopt the Interagency Scientific Committee Conservation Strategy, and eliminate or relocate timber harvest activities to areas outside HCAs.	Conservation Recommendations: Protect pairs of spotted owls by adjusting unit boundaries, providing buffers, and use of forest practices which provide spotted owl habitat components.

It is not possible to determine an exact point at which the continued existence of a species would be at jeopardy without fully analyzing proposed actions in relation to the environmental baseline. Therefore, the Service will analyze each Federal action submitted for formal consultation in turn and will make the "likely jeopardy/not likely jeopardy" finding on a case-by-case basis.

o INCIDENTAL TAKE GUIDELINES UNDER SECTIONS 7 AND 10

The taking of any listed species is generally prohibited under Section 9 of the ESA and implementing regulations. There are, however, a number of exceptions to the taking prohibition.

The 1982 Amendments to the ESA gave the Service procedures to authorize the "incidental take" of listed wildlife species. These procedures are contained in Sections 7 and 10 of the ESA. "Incidental take" in this context is take which is "incidental to, and not the purpose of, carrying out otherwise lawful activities" (See 16 USC 1539 and Sec. 10(a)(1)(B) of the ESA).

The Service offers the following general guidance to address "incidental" take of northern spotted owls that may occur incidentally to timber harvest or related activities. The Service gives notice that any incidental take of northern spotted owls that results from activities carried out in a manner inconsistent with the guidelines (and not authorized under the provisions of Section 7 or Section 10 of the Act), will be subject to investigation by the Service pursuant to Section 9 of the Act.

It is important to note that the Service fully intends to consider all requests for incidental take authorizations under Section 7 (Federal) or Section 10 (State and private) of the Act, as appropriate. These interim guidelines are intended to present, to the best of our ability, guidance for addressing the need for incidental take authorization; and therefore to provide guidance for reducing potential conflicts with Section 9 of the Act.

An obvious incidental take situation would exist if an otherwise lawful timber harvest activity would result in the direct loss of any individual (adult or young), or an active nest (with young or eggs). It is more difficult to determine when incidental take of owls might occur as a result of altering habitat surrounding a nest site or activity center of a pair of spotted owls.

Even more difficult is assessing when owls may be harmed or harassed by cutting within their home range. In these less obvious situations, the Service recommends that the project proponent initiate a dialogue with the Service to discuss the potential risk of incidental take. In the absence of such a dialogue, the Service offers the following stepwise approach which we believe is a reasonable procedure to reduce the risk that incidental take will occur. If the person engaged in timber harvest entity can demonstrate that these guidelines were followed, the Service does not intend to seek prosecution in the unlikely event that incidental take occurs in spite of implementing the guidelines.

The focus of our incidental take guidelines is on northern spotted owls, including their eggs and young. We therefore recommend the following stepwise approach to avoid or reduce the risk of incidental take:

1. Conduct spotted owl surveys during the breeding season and prior to any harvest activity according to the Forest Service protocols addressed in the Interagency Scientific Committee report. The Service may suggest other owl survey techniques in the near future. Such surveys should be a standard practice for planning timber harvest activities.

2. Avoid any harvest activity which results in less than 70 acres of the best available suitable owl habitat encompassing the nest site and/or activity center of a pair of spotted owls.

3. Avoid any harvest activity which results in less than 500 acres of suitable habitat within a 0.7-mile radius (1000 acres) of a nest site and/or activity center. The 500 acres may include the 70 acres in No. 2 above and should be as contiguous as possible.

4. Avoid any harvest activity which results in less than a 40 percent coverage by suitable owl habitat within a circle with a radius centered on a nest site and/or center of activity and as prescribed by physiographic province (see Table 2). The 40 percent may include the acreage required in No. 2 and No. 3 above.

The Service recognizes that there is variation among individuals. Specific information on home range size, habitat use, nest site, or the center of activity of well-studied owls in similar habitat in the same portion of the range could be used to justify an exception to these guidelines and continue to avoid incidental take. In addition, habitat use information on which the above recommendations are based (see ISC 1990, USDI 1990) may change as a result of more recent studies, and the Service will continue to update its database to ensure that the most recent information is included.

To summarize the procedures for pursuing incidental take authorization for non-Federal activities, if incidental take is identified as a concern on State or private lands, individual landowners should consider development of a habitat conservation plan. The Section 10 (a)(1)(B) permit application can be submitted separately by individual applicants or through the appropriate State agency as described in the discussion on Section 10 permits in this document. The Service strongly encourages a pre-application dialogue with any potential permit applicant at any time.

Table 2. Calculations to Develop Incidental Take Guidelines Based upon Home Range Size by Physiographic Province[1]

Province	Median Home Range Size		40 Percent of Median Home Range Size
	Acres	Radius	Acres
WASHINGTON			
Olympic Peninsula	9900	2.2 miles	3960
Cascades	6600	1.8 miles	2640
OREGON			
Cascades	2500	1.2 miles	1000
Coast Range	3400	1.3 miles	1360
Klamath	2500	1.2 miles	1000
CALIFORNIA			
Klamath	2500	1.2 miles	1000

---

1. The Service will continue to revise this table as more data become available.

References:

Interagency Scientific Committee. 1990. Conservation strategy for the northern spotted owl. Report of the Interagency Scientific Committee to address the conservation of the northern spotted owl. U.S. Department of Agriculture, Forest Servcie, and U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, Oregon.

U.S. Department of the Interior. 1990. 1990 Status Review. Northern Spotted Owl. Report to the U.S. Fish and Wildlife Service. Portland, Oregon.

o HABITAT CONSERVATION PLANNING UNDER SECTIONS 9 AND 10

A permit from the Service pursuant to Section 10(a)(1)(B) of the ESA authorizes incidental take much as a Section 7 consultation does through an "Incidental Take Statement" for Federal actions. However, Section 10 of the ESA typically applies to non-Federal actions. Individuals, corporations, non-Federal government entities, States, and other parties can apply for an incidental take permit by submitting an application and a habitat conservation plan to the Service. "Conservation Planning" is the term often used to refer to this process. In the case of the owl, the Service recommends maximizing efficiency of effort by developing a habitat conservation plan which includes the incidental take requests for a number of entities through the appropriate State land-managing agency.

The issuance of an incidental take permit by the Service is contingent upon the applicant's development of a Service-approved conservation plan for the listed species affected by the subject project or action (a more detailed document, "Draft Conservation Planning Guidelines," is available from the Service's Portland Regional Office). Such a conservation plan must specify:

1. the anticipated impacts likely to result in take of listed species;
2. the mitigation and monitoring measures the applicant will undertake to alleviate the impacts of the taking;
3. alternative actions to such taking that were considered;
4. why these alternatives were not employed;
5. funding that will be provided to implement the mitigation measures and attendant conservation plan; and
6. additional measures that the Service may require as necessary or appropriate for the conservation of the species.

Because applicants may have difficulty in adequately addressing these conservation planning needs independently, the Service generally works with an applicant throughout the pre-application phase. Adequate quantification of impacts (i.e., incidental take) usually requires that the applicant: (1) define the conservation planning area, (2) collect necessary biological data on the species of concern, and (3) detail the proposed activities likely resulting in incidental take.

Upon receipt of the application and conservation plan, the Service may issue an incidental take permit if it determines that the following conditions have been met:

1. the taking will be incidental to the action;
2. the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of taking;
3. the applicant will ensure that adequate funding will be provided for the conservation plan and procedures to deal with unforeseen circumstances;
4. the taking will not appreciably reduce the likelihood of the survival and recovery of the subject species in the wild;
5. the applicant will ensure that other measures required by the Service will be provided; and

6. the plan will be implemented.

The third item above generally requires the development of an implementing agreement, which is a legal document binding all implementing parties to the proposed conservation plan.

The Service must also address the National Environmental Policy Act (NEPA) in the ESA Section 10(a)(1)(B) permit process. In most cases the Service delegates the development of information needed for preparation of NEPA documentation to the applicant to expedite the process. In general, if the incidental take permit will result in a significant net loss of individuals and/or habitat, an EIS likely will be required. This often adds 9 months to 1 year to the process. Conversely, if the permit will result in a net gain or insignificant net loss of individuals and/or habitat, an environmental assessment leading to a finding of no significant impact likely will be sufficient for NEPA compliance. In such a scenario, a permit could be considered for issuance in as little as 3 months.

Section 10 and Northern Spotted Owls

Timber harvest on State and private lands may result in the incidental take of northern spotted owls. Because the States authorize private timber harvest, they may be party to take on private lands, as well as on State lands. In the absence of an incidental take permit, this take would be a violation of ESA. The implications for the northern spotted owl are considerable, since a large portion of the total harvest volume in the owl's range comes from non-Federal lands. At least in California, important numbers of owls occur on private lands; there are fewer owls on private lands in Washington and Oregon.

There are two approaches to managing the Section 10 process for spotted owls. One is for the individual landowner to prepare an HCP and apply for an incidental take permit for his lands. The second is for the State to prepare an HCP for all state and private timber lands. The Service would prefer to proceed with the latter approach, since it would add efficiency to the conservation planning process.

The States of Washington, Oregon, and California are at different stages in this process. In Washington and Oregon, the Service has notified the States of their potential responsibilities and initial informational discussions are beginning. In California, the State Board of Forestry, Department of Forestry, Department of Fish and Game, industry representatives, and the Service have been meeting regularly since November, 1989.

The State of California is planning to prepare an HCP covering timber management throughout the range of the subspecies in the state. The California HCP and accompanying NEPA process probably may not be completed until sometime in 1991. During the interim period, the State would attempt to prevent take through a review process that supplements its existing timber harvest permit procedure. In the meantime, large industrial timber firms have indicated their intent to proceed with individual HCPs.

o RECOVERY PLANNING UNDER SECTION 4

Section 4(f) of the Endangered Species Act requires development and implementation of recovery plans for listed species. Recovery actions are meant to arrest or reverse the species' decline and neutralize the threats to its survival so that its long-term survival in the wild can be ensured.

A recovery plan delineates, justifies, and schedules the research and management actions necessary to support recovery of the species. Coordination among Federal, State, local agencies, organizations, and private entities is essential. Although recovery plans do not commit manpower or funds, they must identify site-specific management actions, estimate the time frame and costs for recovery, identify research needs, and establish measurable goals for recovery.

A recovery plan contains three parts. Part 1 is an overview of the species, its biology, life history, habitat requirements, and discussion of the threats that have led to its listing as an endangered or threatened species. Part 2 identifies the Service's goals and objectives for recovery of the listed species. These are presented in a step-down outline that recommends the steps that should be taken to help recover and delist the species. In most cases these recommendations are research oriented. Any recommended management actions may require NEPA documentation prior to implementation. Part 3 provides an implementation schedule that identifies the key players and the costs associated with recommended projects.

Development of a recovery plan requires a public review process prior to approval of the plan. There are no specific time frames associated with the development of a recovery plan, and a plan is not necessary for the Service to conduct Section 7 consultation, carry out research and management activities, or identify goals and objectives for the species. If the Service follows the normal procedure for producing a recovery plan, it is anticipated that two years would be required to complete the necessary steps before a plan would be finalized. A process for developing a recovery plan under these circumstances is described in Appendix 4. Specific guidelines that describe the recovery planning process are available from the Service.

Interagency Scientific Committee Conservation Strategy

The Fish and Wildlife Service, Forest Service, Bureau of Land Management, and the National Park Service entered into a charter under the 1988 Interagency Agreement on spotted owls to establish an Interagency Scientific Committee (Committee). This Committee was also recognized by Congress in Section 318 of Public Law 101-121. The purpose of this Committee was to assess all available information on the management and biology of the northern subspecies and recommend a strategy for the conservation of the northern spotted owl. The Committee submitted "A Conservation Strategy for the Northern Spotted Owl" to Congress and the four agencies on April 4, 1990. The Forest Service must report to Congress on its intentions towards management of the owl by September 30, 1990.

As noted above, the Committee has produced a scientifically credible strategy for the long-term viability of the northern spotted owl. The agencies have endorsed the science associated with this plan, and are presently reviewing it to determine its acceptability as an approach to managing the owl under their multiple-use responsibilities. The Committee has utilized the best scientific information available, including contact with or the participation of all the most knowledgeable spotted owl experts in the process to develop this strategy.

The Service believes that this report represents the most comprehensive and in-depth analysis of the data available. The Service fully endorses the scientific credibility of the report and its applicability as a management approach for the northern spotted owl. Given this, the Service is reviewing this document for its applicability as a recovery plan under the Endangered Species Act (see Appendix 4).

The process followed to produce the ISC's plan has met two of the Service's requirements for development of a recovery plan. First, the most knowledgeable owl experts available, representing all major constituencies, were involved in its development. Secondly, the best available information was used to develop the strategy. Establishment of recovery goals, evaluation of the conservation strategy relative to these goals, and inclusion of a public review process would be required to complete the process.

In the interim, the Service strongly recommends that the agencies consider implementation of the conservation strategy, as fully described by the Committee. Acceptance and implementation of the strategy, as recommended, would provide a sound basis for Section 7 consultation, help address the issue of take on Federal and private lands, and reduce concern over the economic impacts of recovery and species management.

The conservation strategy includes a process for revision of the strategy as more and better information becomes available. In addition, the Service has recently established a coordinating committee under a 1990 interagency agreement (Attachment 5) with the States of California, Oregon, and Washington, and the USDA Forest Service, Bureau of Land Management, and National Park Service. The intent of this new agreement is to provide a forum to coordinate the management and conservation of the northern spotted owl. The Service believes that these processes allow for an open and appropriate forum for consideration and inclusion of recovery goals, other issues that may arise, as well as adjustment of the strategy itself that may be required during its implementation.

CONCLUSION: OWL PROCEDURES MANUAL

The Tables and Appendices noted in the narrative are attached. The Owl Procedures Manual will be updated and augmented as new information becomes available. Components of future consultations, such as development of incidental take statements, will generally follow the direction of this manual, but may change based on new biological information and professional judgment.

APPENDICES

to

OWL PROCEDURES MANUAL

APPENDIX 1: Biological Assessment Information

In general, biological assessments for the pre-1989 and 1989-1990 timber sale programs should contain the following information. The Service will work with the agencies to identify the data needs for future sale reviews.

Biological Assessment Format

1. Introduction

   - Brief summary of the objectives of the Biological Assessment; reference the Forest plans or timber plans under which sales were prepared.

   - Address other listed species (species for which the "may affect" standard applies, or acknowledgement that such species have been consulted on separately).

2. Description of the Proposed Action

   - Description of the Forest Service's Pacific Northwest and Pacific Southwest Regions or the BLM Districts in Oregon including total acreage, description and amount of forested acres, and owl habitat information such as amount, distribution, etc., by land area under consideration. This information should be totalled by physiographic province and Forest or BLM District.

   - Description of the timber sale program being addressed.

   - For pre-1989 sales, where discretionary authority is retained, provide the following information, totaled by physiographic province and Forest or BLM District:

     a. total number and volume of sales, and acreages by type (clearcut, shelterwood, amount and type of salvage, etc.)

     b. number and list of "no effect" sales and justification for this determination.

     c. number and list of "may affect" sales, including volumes and acreages of suitable and unsuitable habitat. - indicate in the two lists above those sales that are located fully or partially within HCAs, SOHAs, Areas of concern, and/or ODFW/BLM agreement sites.

   - For 1989-1990 sales, provide the following information, totalled by physiographic province and Forest or BLM District:

     a. total number and volume of sales, and acreages by type (clearcut, shelterwood, amount and type of salvage, etc.);

APPENDIX 1 (cont.)

b. number and list of "no effect" sales and justification for this determination;

c. number and list of "may affect" sales, including volumes and acreages of suitable and unsuitable habitat, for both discretionary and non-discretionary sales; also indicate if the sale has been surveyed 0, 3, or 6 times, and whether the sale complies with the 50-11-40 rule

d. indicate in the lists above, those sales that are located fully or partially within HCAs, SOHAs, Areas of Concern, and/or ODFW/BLM agreement sites.

e. description of other activities that may be subject to future Section 7 consultation.

3. Description of the Affected Environment

- Definition of spotted owl habitat and the amount in acres within each physiographic province, Forest and BLM District.
- Biological data on listed species (historical use, presence, potential use); information and/or other documents containing such information may be incorporated by reference
- Spotted owl information (from data bases, 1985 to Present) should include information on all owls, pairs and singles, and those unaffected by the timber sale programs.

4. Analysis of the Effects of the Action

- General description
- Direct and indirect effects such as habitat loss, dispersal habitat, number of owl pairs affected, etc. Indicate the amount of owl habitat (distinguish dispersal habitat when possible) proposed to be removed or altered (from partial harvest) in each physiographic province and Forest. This section should also include a summary analysis of effects on owl pairs from any or all of the following: sales within 0.5 mile of activity centers/nest sites; sales within 2.1/2.5 miles (home ranges); sales within 2.1/2.5 miles, where habitat would be reduced to below the minimum used by owl pairs in that province; and sales within Areas of Concern, as described in the Service's 1989 Status Review on the owl. It is important that this summary reflect the cumulative impacts to an owl pair from all sales affecting the pair.

APPENDIX 1 (cont.)

- Interrelated and interdependent actions such as roads, silvicultural treatments, recreational projects, etc.

- Cumulative impacts - future State and private actions, especially when these activities would affect owl pairs with home ranges overlapping federal and state or private lands.

- Brief discussion of other listed species - provide an analysis of effects of the action to other listed species.

5. Alternatives Considered

   - Brief discussion of alternatives for sale, etc.

   - Describe conservation measures implemented to reduce or minimize impacts to spotted owls or habitat.

   - Prepare a contingency plan for situations where owl pairs are found in active timber sales.

   - Summary of program changes as a result of the above (for 318 package). Forest Service Region 5 will provide changes in the 1989-1990 sale program.

6. Conclusions (for the timber sale package submitted for formal consultation)

   - How will the action (package) affect each listed species:

     a. no adverse affect;
     b. may adversely affect; or
     c. may beneficially affect?

   - Request consultation for those which may affect (adversely or beneficially).

APPENDIX 1 (cont.)

Information Needs

To aid our analysis of impacts to owls in the biological opinions, and to complete our administrative record, the Service has requested that the agencies provide information, in a Table format, on owls and owl habitat.

- Number and list of owl pairs and singles (including those whose status is unconfirmed), by Forest or BLM District. This list should include those pairs whose home range or 2.1/2.5 mile radius circle overlaps adjacent state or private lands.

- For each owl pair affected by the program, provide the following information:

  a. pre-harvest acres of suitable habitat available to the pair within 0.5 miles and between 0.5 and 2.1/2.5 miles.

  b. acres of owl habitat removed within those distances, for each sale and for all sales (cumulative); and

  c. whether the pair is located in an area of concern, HCA, SOHA, or ODFW/BLM Agreement area.

- Database tables for individual timber sales brought forward for consultation.

- Short narratives from each Forest and BLM District to address selected parts of the above outline and summarize the biological evaluations for each sale.

APPENDIX 2: Biological Opinion Format

The following provides a description of the general format that the Service follows when it provides a biological opinion to an action agency under Section 7 of the ESA.

Biological Opinion Format

1. Introduction
    a. Identify the issue and species in consultation

2. Biological Opinion
    a. Succinct statement (...is/is not likely to jeopardize, ...will/will not adversely modify critical habitat) for each species.

3. Description of the Proposed Action
    a. Cite Public Notice, EIS, plan document, or rationale for packaging from biological assessment.
    b. Include interrelated, interdependent actions considered.

4. Species Account
    a. Status and biology of listed and proposed species.

5. Effects of the Proposed Action on Listed Species
    a. Cite past Opinions to same agency, recovery plans, Biological Assessments, etc., for species accounts.
    b. Include species information relevant to action area.
    c. Explain effects that are adverse or beneficial.
    d. If jeopardy, stress aspects that cause jeopardy.
    e. Provide a basis for reasonable and prudent alternatives, and/or conservation recommendations.

6. Cumulative Effects

7. Reasonable and Prudent Alternatives
    a. If appropriate, but only for jeopardy findings.

8. Incidental Take
    a. Include sections in order.
        1. anticipated incidental take.
        2. reasonable and prudent measures to minimize incidental take.
        3. terms and conditions necessary to implement reasonable and prudent measures.
        4. instructions on disposition of dead animals.
    b. See Table 1 in this document.

9. Conservation Recommendations
    a. See Appendices 3A and B in this document.

10. Closing

11. Literature Cited

APPENDIX 3A: Section 7 Consultation - Example Conservation Recommendations Likely to be Recommended if the Interagency Scientific Committee Conservation Strategy Serves as the Basis for Consultation

The Service will provide conservation recommendations under Section 7(a)(1). These recommendations are not mandatory, but are intended to assist the agency in implementing actions that may result in the conservation of the owl.

1. The Forest Service and Bureau of Land Management should coordinate with the Service to develop a tracking procedure that will monitor implementation of the sale program and document the following: the total number of owls impacted and at what levels; and the total amount of owl habitat removed from the environmental baseline.

2. Proposed sale areas and owl sites should be surveyed a minimum of 6 times within a given season to provide a reasonably accurate data base from which to make sound management decisions.

3. The Forest Service and Bureau of Land Management should coordinate with the Service and State resource agencies to design and conduct spotted owl research and monitoring efforts, including banding and telemetry programs and studies of habitat utilization.

4. Design, implement, and monitor timber harvest prescriptions to minimize impacts to the spotted owl and, in the long term, create or restore the necessary components of owl habitat. Consider testing the following prescriptions on a site specific basis, as appropriate:

    a. Selectively harvest to retain a specified number of green trees per acre, thereby facilitating more rapid development of a multi-layered canopy.

    b. Leave sufficient snags and down woody material to provide for the prey base requirements for spotted owls. Refer to the research paper by Spies, et al. (1988) for guidelines. Coordinate with fire and pest management specialists.

    c. Burn post-harvest fuels only as necessary for fuel reduction and insect control. Retain large down logs where possible. Coordinate with fire and pest management specialists.

    d. Treat stands of young trees to facilitate more rapid production of large trees and well-developed multi-storied stands.

    e. Create or improve the decadent tree component by topping or girdling large trees. Coordinate with fire and pest management specialists.

    f. Selectively harvest to encourage understory development while retaining overstory canopy closure of 40% or more.

APPENDIX 3A (cont.)

  - Leave sufficient green trees (at least 12 per acre, individually and in clusters of mixed species and ages) to serve as the upper canopy layer as habitat recovers its value for nesting, roosting, and foraging activities of spotted owls; and

g. Within shelterwood harvests, leave 8-15 mature trees per acre to provide the components of spotted owl nesting, roosting, and foraging habitat. Eliminate the final overstory removal phase.

5. Work closely with adjacent Federal, State, and private landowners to properly manage spotted owl habitat on a landscape level, monitor owls and the effects of timber sale-related activities, and design sales to avoid adverse impacts to spotted owls.

6. Consider evaluating allowable sale quantities on an acreage basis in addition to a volume basis to provide increased flexibility in managing for spotted owls and other environmental values in terms of habitat capabilities.

7. Adjust the timber base through your planning process to account for habitat reserved or managed for the spotted owl to help assure its long term survival.

8. Consider reducing the annual allowable sale quantities to facilitate implementation of the ISC Conservation Strategy and conserve spotted owl habitat.

9. Coordinate the funding, development, and maintenance of a geographic information system that is compatible between Federal and State land management and fish and wildlife resource agencies for the long-term tracking of spotted owls and their habitat.

APPENDIX 3B: Section 7 Consultation - General Conservation Recommendations Likely to be Recommended if the Interagency Scientific Committee Conservation Strategy does Not Serve as the Basis for Consultation

These recommendations are based upon the Service's knowledge of current management scenarios being pursued by the Forest Service (SOHA system) and Bureau of Land Management (ODFW agreement areas).

1. Eliminate or relocate the timber sales/units that are within 0.5-miles of a pair, and/or would reduce the amount of owl habitat to less than the minimum known to be used by owl pairs in each province.

2. Eliminate or relocate timber sales/units in areas of special concern (as identified in the Service's 1989 Status Review) unless an interagency plan for the conservation of dispersal habitat has been implemented.

3. Prioritize timber sales so that sales not impacting spotted owl pairs and/or spotted owl habitat are contracted first. Sales which have a minor impact should be contracted second, and sales that have a major impact should be offered last and only when absolutely necessary.

4. The Forest Service and Bureau of Land Management should coordinate with the Service to develop a tracking procedure that will monitor implementation of the sale program and document the following: the number and kinds of recommendations that are implemented; the total number of spotted owls impacted and to what degree; and the total amount of spotted owl habitat removed from the environmental baseline.

5. Proposed sale areas and owl sites should be surveyed a minimum of 6 times within a given season to provide a reasonably accurate data base from which to make sound management decisions.

6. The Forest Service and Bureau of Land Management should coordinate with the Service and State resource agencies to design and conduct spotted owl research and monitoring efforts, including banding and telemetry programs and studies of habitat utilization.

7. Management plans should be developed, in coordination with state and Federal wildlife agencies and the Forestry Sciences Labs, to provide for the long-term development and maintenance of nesting, foraging, and dispersal habitat necessary to maintain the northern spotted owl. Particular attention should be paid to avoiding impacts to spotted owls and restoring habitat within the identified areas of special concern.

8. Timber harvest activities should be minimized within relatively large, contiguous blocks of spotted owl habitat. Consider aggregating, instead of dispersing, these activities within the forest landscape, to avoid increasing fragmentation of remaining spotted owl habitat. Allow for changes in harvest prescription, from clearcut to commercial thinning or individual tree marking, to preserve necessary owl habitat components.

APPENDIX 3B (cont.)

9. Design, implement, and monitor timber harvest prescriptions to minimize impacts to the spotted owl and, in the long-term, create or restore the necessary habitat components of owl habitat. Consider testing the following prescriptions on a site specific basis, as appropriate:

   a. Selectively harvest to retain a specified number of green trees per acre, thereby facilitating more rapid development of a multi-layered canopy.

   b. Leave sufficient snags and down woody material to provide for the prey base requirements for spotted owls. Refer to the research paper by Spies, et al. (1988) for guidelines. Coordinate with fire and pest management specialists.

   c. Burn post-harvest fuels only as necessary for fuel reduction and insect control. Retain large down logs where possible. Coordinated with fire and pest management specialists.

   d. Treat stands of young trees to facilitate more rapid production of large trees and well-developed multi-storied stands.

   e. Create or improve the decadent tree component by topping or girdling large trees. Coordinate with fire and pest management specialists.

   f. Selectively harvest to encourage understory development while retaining overstory canopy closure of 40% or more.

      - Leave sufficient green trees (at least 12 per acre, individually and in clusters of mixed species and ages) to serve as the upper canopy layer as habitat recovers its value for nesting, roosting, and foraging activities of spotted owls; and

      - Within shelterwood harvests, leave 8-15 mature trees per acre to provide the components of spotted owl nesting, roosting, and foraging habitat. Eliminate the final overstory removal phase.

10. Work closely with adjacent Federal, State, and private landowners to properly manage spotted owl habitat on a landscape level, monitor owls and the effects of timber sale-related activities, and design sales to avoid adverse impacts to spotted owls.

11. Consider evaluating allowable sale quantities on an acreage basis in addition to a volume basis to provide increased flexibility in managing for spotted owls and other environmental values in terms of habitat capabilities.

APPENDIX 3B (cont.)

12. Adjust the timber base through your planning process to account for habitat reserved or managed for the spotted owl to help assure its long term survival.

13. Consider reducing the annual allowable sale quantities to facilitate implementation of the ISC Conservation Strategy and conserve spotted owl habitat.

14. Coordinate the funding, development, and maintenance of a geographic information system that is compatible between Federal and State land management and fish and wildlife resource agencies for the long-term tracking of spotted owls and their habitat.

APPENDIX 4: Recovery Strategy

Approach 1: If the agencies implement the ISC conservation strategy as a management plan for the northern spotted owl, the Service can use this approach as an interim recovery plan while the strategy is being assessed through the recovery planning process for its applicability and acceptability as a formal recovery plan. Therefore, the Service recommends the following approach:

June/July 1990

- The agencies indicate their acceptance and intentions towards implementation of the Conservation strategy.
- The Service will convene a group of recognized experts (which may include members of the Scientific Committee and the Listing Review Team) to review the strategy in relation to the requirements and mandates of the Endangered Species Act and the feasibility of adopting the ISC plan for recovery planning purposes.

July 1990

- A report will be provided to the Service on the applicability of the ISC Conservation Strategy as a recovery plan.
- The Service will announce a decision to proceed with the recovery planning process using either the Conservation Strategy or another approach.
    - If the Conservation Strategy is appropriate as a recovery plan, the Service will pursue its obligations to consider public input prior to finalization of the document as a recovery plan and to complete the planning processes.
    - If the Service decides to pursue development of another recovery planning document, procedures described in Approach 2 would be followed.

January 1991

- Finalize and approve recovery plan (if the ISC strategy is the recommended approach).

Approach 2: If the Service follows a normal process for developing a recovery plan, it is recommended that a "classic" scientific recovery team be established for the owl. Through the ISC team effort and the Listing Review Team there are a number of highly qualified persons identified as good candidates to serve on the Team. As a mechanism for the science of recovery to interface with land management concerns, the Team Leader should participate in the Interagency Northern Spotted Owl Conservation Group (formally ISOC) meetings. The ISC report provides a good starting point for a recovery plan; the Service will need to look closely at this document in establishing recovery goals and objectives.

July 1990

- Send out letters to agencies, universities, etc. requesting nominations to recovery team. Expertise will be sought in the following areas:

  1. northern spotted owl ecology,
  2. conservation biology,
  3. population genetics,
  4. population ecology,
  5. biogeographical modeling with expertise in geographic information systems; and
  6. old growth forest management.

August 1990

- Select recovery team, and schedule first team meeting.

September 1991

- Complete draft recovery plan for public review and comment.

March 1992

- Finalize and approve a recovery plan.

April 1992 and Beyond

- Implement the recovery plan. This could be done using an implementation team approach. Representatives would include those from: Forest Service, Bureau of Land Management, State wildlife agencies, State forestry departments, timber industry, and environmental groups.

- A management oversight group and technical group could be formed to advise the Service (oversee) research and management actions affecting recovery of the northern spotted owl.

APPENDIX 5: 1990 Interagency Agreement (attached)

MEMORANDUM OF AGREEMENT

AMONG

STATE OF CALIFORNIA
THE RESOURCES AGENCY

STATE OF WASHINGTON
DEPARTMENT OF WILDLIFE,

STATE OF OREGON
DEPARTMENT OF FISH AND WILDLIFE,

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE,
BUREAU OF LAND MANAGEMENT,
NATIONAL PARK SERVICE,

AND

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

TO ESTABLISH AN INTERAGENCY
NORTHERN SPOTTED OWL CONSERVATION GROUP

This Memorandum of Agreement ("Memorandum") is entered into this 13th day of April, 1990, among the State of California Resources Agency, the Oregon Department of Fish and Wildlife, the Washington Department of Wildlife, the U.S. Fish and Wildlife Service, the USDA Forest Service, the Bureau of Land Management, and the National Park Service (collectively called the "Public Agencies").

WHEREAS, all parties to this Memorandum of Agreement recognize that they each have responsibilities under their statutory authorities that cannot be delegated and that this Memorandum cannot and is not intended to abrogate any of their independent decision-making responsibilities, and

WHEREAS, the Public Agencies are among the Federal and State agencies that have regulatory authority or responsibility under certain Federal and State statutes to manage for the northern spotted owl (Strix occidentalis caurina) and its habitat, and

WHEREAS, the multiple sources of authority under which the Public Agencies operate do not provide any individual agency with the authority to implement a comprehensive program to provide for the long-term conservation of the northern spotted owl across its historic range, and

WHEREAS, the Federal Agencies have entered into an interagency agreement to cooperate in ensuring the conservation of the spotted owl, and

WHEREAS, the Public Agencies desire that their activities, to fulfill their respective responsibilities with regard to the conservation of the northern subspecies of the spotted owl, be coordinated in such a manner as to ensure effective, timely, and mutually beneficial use of financial and personnel resources, and

WHEREAS, the Public Agencies share the common goal of ensuring the conservation for the northern spotted owl,

THEREFORE, it is mutually agreed and understood that:

PURPOSE OF MEMORANDUM

The Public Agencies have entered into this Memorandum to establish an Interagency Northern Spotted Owl Conservation Group to develop and ensure compliance with cooperative programs related to the conservation of the northern spotted owl.

INTERAGENCY NORTHERN SPOTTED OWL CONSERVATION GROUP

Secretary, State of California, The Resources Agency
Director, State of Washington, Department of Wildlife
Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon
Regional Forester, U.S. Forest Service, Portland, Oregon
Director, Pacific Northwest Experiment Station, Portland, Oregon
Regional Forester, U.S. Forest Service, San Francisco, California
State Director, U.S. Bureau of Land Management, Portland, Oregon
State Director, U.S. Bureau of Land Management, Sacramento, California
Regional Director, National Park Service, San Francisco, California
Regional Director, National Park Service, Seattle, Washington
Director, State of Oregon, Department of Fish and Wildlife

OPERATION

1. The Regional Director of the U.S. Fish and Wildlife Service shall chair the Interagency Northern Spotted Owl Conservation Group (Interagency Group) for a period of 2 years from the date of

execution of this agreement. Chairperson of the Interagency Group shall rotate on an annual basis among the participating agencies. Future chairpersons will be chosen by the Interagency Group.

2. The Interagency Group will meet as frequently as agreed upon by a majority of the voting members. Meetings shall be called by the Chairperson.

3. The Interagency Group may establish, or rely on, existing coordinating or working groups, as necessary or appropriate, to address specific issues relative to northern spotted owl conservation.

RESPONSIBILITIES

1. Identify, consider, and recommend, as appropriate, management and research activities for the conservation of the northern spotted owl.

2. Direct activities of any coordinating or working groups established by the Interagency Group.

3. Exchange information, coordinate, and provide standards and guidelines for needed management, monitoring, and research activities related to the conservation of the northern spotted owl.

4. Serve as a discussion forum for and liaison with all interest groups to serve as a common source of information and to address identified problems or conflicts.

TERM AND AMENDMENTS

This agreement is subject to all applicable laws and regulations. This Agreement may be amended upon the written consent of all parties. Parties to this Agreement may withdraw from this Agreement at any time upon written notice to the Interagency Group chair.

All signatories to this Memorandum agree to seek mutually agreeable solutions to achieve its purposes.

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Memorandum, on the date(s) set forth, as of the day and year last written.

Memorandum of Agreement to Establish an Interagency
Northern Spotted Owl Conservation Group

By ______________________ Date Apl 13, 1990
Director, State of Oregon
Department of Fish and Wildlife
Portland, Oregon

By Curt Smitch Date April 13, 1990
Director, State of Washington
Department of Wildlife
Olympia, Washington

By David M. Jay Date 4-13-90
for Regional Forester
U.S. Forest Service
San Francisco, California

By John F Butruille Date 4-13-90
Regional Forester
U.S. Forest Service
Portland, Oregon

By ______________________ Date 4/13/90
Director
Pacific Northwest Experiment Station
Portland, Oregon

By Marvin L Plenert Date april 13, 1990
Regional Director
U.S. Fish and Wildlife Service
Portland, Oregon

By ______________________ Date April 13, 1990
for State Director
U.S. Bureau of Land Management
Sacramento, California

By Elaine Y. Zielinski Date April 13, 1990
for State Director
U.S. Bureau of Land Management
Portland, Oregon

By ______________________ Date April 19, 1990
for Regional Director
National Park Service
San Francisco, California

By William J. Briggle Date April 13, 1990
Acting Regional Director
National Park Service
Seattle, Washington

United States Department of Agriculture

Forest Service

Washington Office

14th & Independence SW
201 14th Street SW
P.O. Box 96090
Washington, DC 20090-6090

Reply To: 1570

Date: June 22, 1990

Honorable Dale Bumpers
Chairman, Subcommittee on Public Lands
National Parks and Forests
United States Senate
Washington, D.C. 20510

Dear Senator Bumpers:

Here is our response to the questions you submitted to us in writing following the hearing on "The Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl."

If you have any questions, please contact Susan Yonts-Shepard at 382-9471.

Sincerely,

James C. Overbay
for F. Dale Robertson
Chief

Enclosures

Caring for the Land and Serving People

FS-6200-28b(4/88)

yellow

United States Department of Agriculture
Forest Service
Washington Office
14th & Independence SW
201 14th Street SW
P.O. Box 96090
Washington, DC 20090-6090

Reply To: 1570

Date: June 22, 1990

Honorable Dale Bumpers
Chairman, Subcommittee on Public Lands
National Parks and Forests
United States Senate
Washington, D.C. 20510

Dear Senator Bumpers:

Here is our response to the questions you submitted to us in writing following the hearing on "The Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl."

If you have any questions, please contact Susan Yonts-Shepard at 382-9471.

Sincerely,

F. Dale Robertson
Chief

Enclosures

FS:LA:6/22/90:S.Yontsshepard:elc:@elg corr:Gross:Bumpers letter

QUESTIONS SUBMITTED BY MARK HATFIELD
FOR CHIEF ROBERTSON

IMPLEMENTATION

1. Chief Robertson, on page 3 of the Thomas Report, the ISC recommends abandoning the current owl management system based upon the establishment of Spotted Owl Habitat Areas (SOHAs) in favor of protecting larger, unfragmented blocks of forest for owl habitat. These areas would be the so-called Habitat Conservation Areas (HCAs).

Chief, in light of the economic impact assessments prepared by the Forest Service and BLM, as well as by the State of Oregon. What analysis has the Forest Service done since the release of the Thomas Report to substantiate, modify, or reflect this recommendation?

Answer: The Interagecny Scientific Committee, headed by Dr. Jack Ward Thomas, was established through an interagency charter to develop a scientifically credible conservation strategy for the northern spotted owl. The Committee consisted of some of the most knowledgeable scientific experts on the spotted owl. They utilized the best scientific information available and contacted most of the scientists doing research on spotted owls in the process of developing their strategy. The Committee Report represents the latest and most credible scientific information available at this time. We see no need to substantiate the scientific basis of their work. A decision on whether to adopt, modify, or reject the Committee recommendations will not be made until the U.S. Fish and Wildlife Service makes their listing decision on June 23, 1990.

2. Do you agree with the Thomas Committee that the SOHA system be abandoned? What is the basis, beyond the ISC recommendation, for your position?

Answer: If the Thomas Report recommendations are adopted, the Habitat Conservation Area system would replace much of the SOHA system. If the owl is listed as threatened, the U.S. Fish and Wildlife Service would have to concur with a proposal to abandon the SOHA system.

3. Chief, if the Thomas recommendations adopted as part of all of a recovery plan or modified Record of Decision, do you agree that the allocations made in the draft and final forest plans should be adjusted to accommodate these recommendations?

Answer: If the Thomas recommendations are adopted as part of a final recovery plan or as a new Record of Decision for Region 6, the forest plans affected would have to be reviewed and amended as appropriate. This would probably entail adjustment of allocations.

4. Your economic impact numbers were based upon final forest planning decisions. Doesn't this mask the actual impacts, since final forest planning baselines (in terms of timber harvest levels, management prescriptions, etc.) are somewhat lower than current levels: Do the owl impact numbers assume no changes in final plan allocations?

Answer: The starting point for the economic effects analysis is based on timber volume in existing plans, which closely approximates average Federal timber harvest during the decade of the 80's. On a year-to-year basis, in response to market forces and other economic conditions, harvest may fluctuate above or below the long-term sale level, and employment fluctuates with these changes in harvest. The study does not begin at the high harvest levels of recent years, but does accurately state the impacts of moving from current planned levels of harvest to levels associated with implementation of the Interagency Scientific Committee report. It therefore accurately reflects the impact on long-term sustainable employment.

Although the starting point for the economic effects analysis was timber volume associated with current plans, the impacts shown in the report are based on a volume well below this starting point and below the expected final forest plans. The timber volume in current plans for National Forests affected by the spotted owl is 3.8 billion board feet, final plans are projected at about 3.2 billion board feet (plus or minus 10 percent), and the volume with implementation of the Interagency Scientific Committee Conservation Strategy is 2.2 billion board feet.

5. All Westside national forests in Oregon have finished draft forest plans. Only two (Siuslaw and Siskiyou) have approved final forest plans. In theory, the four other westside forests (Mt. Hood, Williamette, Umpqua, Rogue River) operate under their Timber Resource Plans or Land Use Plans approved in the mid 1970's until their final forest plans are approved.

For land "suited for timber productions", the Thomas report states,

> "..retain existing considerations for other resource values such as wildlife trees and downed-wood retention" (page 348).
>
> In the report's endorsement of federal forest plans, precisely what "present direction of management" and "existing considerations are you referencing for the national forests? Does "present direction" and "existing considerations refer to (1) the forest resource plans approved in the mid-1970's; (2) the current draft forest plans; or (3) the proposed direction in the final forest plans?

Answer: "Present direction" and "existing considerations" referred to in the Thomas report references the proposed direction in final forest plans.

6. What information led you to conclude that half of the short-term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

Answer: Our analysis showed that higher prices would result in increased harvest levels from private lands, based on available inventories of timber on private lands and on historic response of private landowners to price changes. Forest Service timber inventory data show a total of about 73 billion board feet of softwood timber age 40 and older on forest industry lands. For other private lands, total inventory in this age grouping is 35 billion board feet. Our base analysis (without implementation of the ISC Strategy) shows slightly more than half of this volume harvested; the remainder contributes to the increased private response under the ISC Strategy.

The private harvest response in 1995 is equal to about half the decline in Federal timber availability; therefore, the job loss would be cut in half. It is important to note that, since this increase in private harvest cannot be sustained, employment loss by 2000 is even greater than the loss from decreased Federal timber availability alone.

7. Have you developed a position on whether to accept the Thomas Plan as recommended? Is there any truth to the rumor that listing the owl by Fish and Wildlife is being advocated so that the Thomas Plan could be adopted as a recovery plan? What are the advantages of such an approach? What are the disadvantages?

Answer: The decision on whether to adopt the Thomas Plan as recommended will be made following the decision made on June 23, 1990 by the U.S. Fish and Wildlife Service on whether to list the owl as threatened. While listing the owl is not being advocated in order to adopt the Thomas Plan, if the owl is listed, the Thomas Plan may provide a starting point for development of a recovery plan. If this is an acceptable approach to the U.S. Fish and Wildife Service, it could shorten the time needed to develop a final recovery plan considerably.

8. It has come to my attention that the Administration is considering making a listing decision prior to June 23rd. What are the advantages of making this decision before the one-year deadline? What are the disadvantages? Chief? Mr. Jamison? Mr. Turner?

Answer: The one year period is a maximum deadline, not a minimum. The advantage of an early decision is that it eliminates the uncertainty of trying to plan a timber sale program without knowing what areas should be protected for the owl. The longer the listing decision takes, the more timber will be sold that may have to be bought back, and the more timber sale planning will be completed that may need to be redone. The disadvantage of early listing is the increased impact to existing timber sales and resultant economic effects.

9. An assumption was made that the private and industrial lands will mitigate up to half the immediate job losses in the short-term (5-10 years). With the already high rate of private harvest, and public pressure to reduce harvest on private lands, how realistic is this assumption? Doesn't the fact that a listing decision will affect volume from private lands diminish because of reductions in federal timber supply?

Answer: The projected harvest levels from private lands are based on available inventories of timber on private lands and on historic response of private landowners to price changes. The data used in the analysis were totals for all of western Washington and Oregon and all of eastern Washington and Oregon. It appears that most of the opportunity for private response would be in Washington and northwest Oregon; these areas contain the greatest acreages of softwood timber inventory over 40 years of age. It is important to note that the Forest Service analysis shows that private lands cannot continue to offset reductions in Federal harvest, and that by 2000 private harvest would also be expected to decline.

10. In many cases, stumpage prices are already significantly higher than finished products values. Does the assumption that increases in stumpage prices will offset lost revenues ignore the record high prices currently being bid?

Answer: The geographic area affected by the ISC Strategy is among the most competitive in the world in terms of roundwood markets. The reductions in volumes of timber offered from Federal lands following implementation of the ISC Strategy will intensify this competition. Surviving mills will generally be the most efficient and the most competitive. Market responses to implementation of the ISC Strategy are based on historical behavioral relationships. These relationships are assumed to continue into the future and lead to the price projections in the report.

11. The Bull Run Watershed on the Mt. Hood National Forest was included in Oregon HCA Number O-1 in the maps which accompanied the Thomas Plan. Bull Run must, under Public Law 95-200, continue to supply high quality water for the Portland metropolitan area. Also, the Thomas Plan assumes no salvage operations would be allowed within HCAs.

Since the Forest Service and the City of Portland advocate such salvage operations as a means to maintain Bull Run's water quality, what alternatives would you suggest to allow for the protection of both water quality and the owl?

Answer: We do not believe there is an inherent conflict with the maintenance of high quality water and protection of owl habitat. In fact, the two goals should complement each other in most instances. While the Thomas Report guidelines in general prohibit salvage of downed or standing dead trees, they do provide for special situations where salvage activities may be approved by an interagency group organized to review implementation of the conservation strategy (p. 347). If the guidelines are adopted, the situation in the Bull Run watershed would have to be evaluated on this basis.

(on behalf of Governor Deukmajian)

12. Where HCAs are in federally designated Wilderness Areas or National Parks, will agencies aggressively control wildfire if the HCAs are threatened?

Answer: Since HCAs would be administratively established and wilderness areas are congressionally established and must be managed under provisions set forth by law, any HCAs in wilderness areas would be managed according to what management activities are allowed in wilderness areas. Under the law, control of fire, as the Secretary deems desirable, is allowed.

(on behalf of Governor Gardner)

13. What will be the impact of immediate implementation of the ISC strategy on other forest resources, such as roadless areas, other wildlife needs, old growth outside of HCAs?

Answer: There should be no immediate effect of implementation of the ISC guidelines on roadless areas, other wildlife needs or old growth outside of HCAs. If, through the Forest plan amendment process, allocations are changed, there could be some impact to these resources. The specific effects can only be determined on a forest-by-forest basis through the amendment process.

14. Could enough timber sales be scheduled outside HCA, given cumulative effects constraints, including 50-11-40, to meet the projected ASQ?

Answer: The Forest Service, Regions 5 and 6. can schedule enough sales outside the HCA's given the cumulative effects constraints to meet 2,173 million board feet, but cannot meet the actual or projected final planned ASQ for 3,200 million board feet.

15. The (economic analysis) report uses draft and final Forest Service plans as the basis for measuring the effects on employment. Is this the proper base for displaying the true economic impacts on the currently economy?

Answer: The starting point is supported in two ways. First, it represents the timber volume in current plans for these National Forests--some plans are in draft stage and some are final. Therefore, based on these current plans, the starting point represents the timber harvest level that could be sustained over time; changes to get to these levels are already expected--they are not something new as a result of the ISC Strategy. Using this rationale, a case could be made for using anticipated timber volume in final forest plans as a starting point. We have shown this as an interim step in the report.

Second, the starting point approximates the average level of harvest during the past decade. Timber harvest fluctuates in the short term depending on economic conditions. Recent harvests are at a cyclically high level; during the early 80's, harvest levels were at a low point. The timber volume used as a starting point therefore represents the average of these levels, which in turn does not represent an unusually high or unusually low level of timber-based employment.

Use of the higher current harvest level would show a greater employment impact resulting from implementation of the ISC Strategy. However, if economic conditions similar to those experienced during the early 80's were to occur, and an analysis done at that time, little comparative impact would be shown. Therefore, a recent average is more representative of the harvest level in the three States.

16. An assumption was made that the private and industrial lands will mitigate up to half the immediate job losses in the short-term (5-10 years). With the already high rate of private harvest, and public pressure to reduce harvest on private lands, how realistic is this assumption?

Answer: The projected harvest levels from private lands are based on available inventories of timber on private lands and on historic response of private landowners to price changes. The data used in the analysis were totals for all of western Washington and Oregon and all of eastern Washington and Oregon. It appears that most of the opportunity for private response would be in Washington and northwest Oregon; these areas contain the greatest acreages of softwood timber inventory over 40 years of age. It is important to note that the Forest Service analysis shows that private lands cannot continue to offset reductions in Federal harvest, and that by 2000 private harvest would also be expected to decline.

17. How would the 50-11-40 rule, 80-acre requirements for pairs outside HCAs, and the elimination of SOHAs outside the NCA strategy overall impact ASQ projections?

Answer: The ASQ would drop from the projected plan level of 3,200 million board feet to 2,173 million board feet in Region 5 and 6 with the implementation of the ISC Strategy.

18. The (economic analysis) report assumes that, on the average, one million board feed equates to 11.7 jobs. Would you rate your multiplier as liberal or conservative?

Answer: The study estimates of employment are based on the input/output model, IMPLAN. For the purposes of analysis of economic effects, IMPLAN models were constructed for each local economy affected by the activities of a particular National Forest. The total number of jobs lost as a result of reductions in Federal harvests are estimated as the sum of all jobs affected in the local economies.

All calculations involving IMPLAN used relationships derived from mostly 1982 data. The IMPLAN model uses data from several sources and any updating of economic relationships is at the mercy of other agencies. For example, the 1982 National Income and Product accounts have yet to be converted into a 1982 National Input-Output model which would be key to a thorough update of IMPLAN. There are various ways to update parts of the IMPLAN model, but updating of economic relationships that determine employment changes cannot be done until the appropriate data are available. The year 1982 saw a severe recession in the timber industries with both production and employment at low points. The concern about the use of 1982 data is that employment per unit of output relationships may not accurately reflect current practice. Relationships based on 1982 data would probably tend to be too high rather than too low as compared with current practice. In our analysis, this would tend to lead to overestimates of the number of jobs lost.

The economic effects report did acknowledge that improvements in productivity could be expected in the future, but did not attempt to estimate them. If the historical rate of productivity improvement of 1.2 percent per year continues into the future, adoption of technology would mean that some of the job loss shown in the economic effects report would occur even without the ISC Strategy. The net effect of the ISC Strategy after accounting for technology would be a loss of 12,545 jobs in 1995 and 24,329 jobs in 2000. The report, which did not contain this technology estimate, showed a loss of 13,272 in 1995 and 28,165 in 2000.

19. Does the assumption that increases in stumpage prices will offset lost revenues ignore the record high prices currently being bid? (In many cases, stumpage prices are already significantly higher than finished product values.)

Answer: The starting point prices used in the economic effects were average stumpage prices for 1989. The geographic area affected by the ISC Strategy is among the most competitive in the world in terms of roundwood markets. The reductions in volumes of timber offered from Federal lands following implementation of the ISC Strategy will intensify this competition. Surviving mills will generally be the most efficient and the most competitive. Market responses to implementation of the ISC Strategy are based on historical behavioral relationships. These relationships are assumed to continue into the future and lead to the price projections in the report.

(on behalf of the Oregon Forest Industries Council)

20. What information led you to conclude that half of the short-term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

Answer: Our analysis showed that higher prices would result in increased harvest levels from private lands, based on available inventories of timber on private lands and on historic response of private landowners to price changes. Forest Service timber inventory data show a total of about 73 billion board feet of softwood timber age 40 and older on forest industry lands. For other private lands, total inventory in this age grouping is 35 billion board feet. Our base analysis (without implementation of the ISC Strategy) shows slightly more than half of this volume harvested; the remainder contributes to the increased private response under the ISC Strategy.

The private harvest response in 1995 is equal to about half the decline in Federal timber availability; therefore, the job loss would be cut in half. It is important to note that, since this increase in private harvest cannot be sustained, employment loss by 2000 is even greater than the loss from decreased Federal timber availability alone.

QUESTIONS SUBMITTED BY SENATOR BUMPERS
FOR CHIEF ROBERTSON

IMPLEMENTATION

1. What are your specific plans for implementing the recommendations of the Thomas Report? Is there any legal obligation to implement the conservation plan at this time?

Answer: We are awaiting a decision by the U.S. Fish and Wildlife Service on whether they will list the northern spotted owl as threatened which they are scheduled to make on June 23, 1990. At that time, if the owl is listed as threatened, if the U.S. Fish and Wildlife Service concurs after formal consultation, we anticipate utilizing the recommendations of the Thomas Report as an interim conservation strategy, until a final recovery plan is developed. If the owl is not listed, we will utilize the Thomas Report recommendations in developing new alternatives to be considered in revising the Chief's December 8, 1988 Record of Decision by September 30, 1990 as directed by Section 318. The revised decision would be implemented by September 30, 1990.

We have no legal obligation to implement the conservation plan at this time, but we are attempting to maintain options for future implementation in the event the decision to adopt the guidelines is made.

2. Do you believe the Thomas Report would be an appropriate recovery plan if the owl is listed?

Answer: The strategy proposed in the Thomas Report provides a scientifically credible conservation strategy which could be part of a recovery plan. However, until the U.S. Fish and Wildlife Service develops recovery goals for the northern spotted owl and compares the Thomas strategy to those goals, it is not possible to evaluate whether this strategy would meet all the requirements for a final recovery plan. The lead responsibility in developing a recovery plan lies with the U.S. Fish and Wildlife Service.

3. Section 6(f)(5) of the National Forest Management Act (NFMA) requires the Forest Service to "revise" a forest plan whenever conditions have "significantly changed." Has the Forest Service determined whether implementation of the Thomas Committee Report or other owl management plan would require revision of existing forest plans?

Answer: At this time only five of the seventeen forests with northern spotted owl habitat have completed Forest Plans. Until the rest of the plans are completed and a decision to either list the owl or adopt the Thomas Report or other owl guidelines is made, it is not possible to determine the extent of the effects on these plans. Once these decisions are made we will have to review the situation and determine what steps are needed.

4. Does the Forest Service plan to do an EIS at all or do you not believe that changes which result from implementation of the Thomas Committee Report or other owl management plan will be significant?

Answer: The decision on whether or not to prepare an EIS depends in part on the listing decision made by the U.S. Fish and Wildlife Service. If the owl is listed as threatened, the Forest Service will fully comply with the provisions of the Endangered Species Act, which does not provide for options.

QUESTIONS SUBMITTED BY SENATOR BUMPERS
FOR CHIEF ROBERTSON

ECONOMICS

1. The ISC Report states that "A balanced assessment of the impacts of this strategy must consider water quality, fisheries, recreation, soils, streamflows, scenic values, biodiversity, and other species of wildlife. All aspects of such a decision should be weighed in the balance. The issues are not limited to questions of owls and timber supply, as important as those are. The matter is not that simple -- it never has been". The entire "spotted owl issue" is just one of many related concerns. All should be considered. So far all we have seen in the way of an assessment is the estimated effects of the proposed plan on timber and associated jobs. What efforts are underway to conduct the more comprehensive assessment the ISC report calls for, and when can we expect to see the results of such an assessment.

Answer: Yes, you are correct. Those issues and concerns are important. We will evaluate those as part of our decision when/if we implement the the ISC Report.

2. I am looking at a chart which summarized the economic effects of implementing the Thomas Report. This chart displays a potential loss of approximately 25,000 jobs by 1995 if the recommendations of the report are implemented. You also stated in a footnote that these figures also incorporated some job loss expected by moving from the draft to final forest plans. Is that correct? I would first like to ask, then, what job loss is strictly attributable to the recommendations of the Thomas Report and where is this figure listed in the Economic Impacts Report?

Answer: Estimated loss of jobs associated with Federal timber harvest was 25,409 in the economic impact report. Of these, 6,248 jobs are attributable to final forest plan harvest levels and 19,162 would result from full implementation of the ISC Strategy. It is important to recognize that the spotted owl was considered in establishing timber volumes in the forest plans.

Table 4 on page 46 of the Economic Effects Report shows, by affected National Forest and BLM District, employment associated with current plans, projected final plans (where plans have not yet been finalized), and implementation of the ISC Strategy.

3. I would further note that this chart shows that at least for the short term an expected increase in jobs on private lands would mitigate that by about 12,000, for a actual net loss of 13,000. Is that correct? Could you explain how that transfer of jobs would occur?

Answer: Your assessment of the mitigation of job loss through increased harvest on private lands is correct for 1995. However, by 2000, private harvest levels could not be sustained, and job loss associated with both Federal and private lands would be about 28,000.

The mitigation of job loss in 1995 (transfer of jobs) would occur because reduction in Federal timber availability would cause a sharp rise in prices. This price increase would stimulate private owners to put a greater volume of timber on the market which, in turn, would provide for additional jobs.

4. As the timber industry moved out of its recession in the early 1980's to record level harvests in the mid-to-late 1980's did we see a proportionate increase in timber-related employment? Over the years, has increased automation of mills resulted in a loss of employment? If so, how many jobs have been lost to automation in the Pacific Northwest? How many more do you expect to lose to automation in the future? What is the current job/mmbf ratio? What was that ratio years ago? Twenty years ago? What is that ratio expected to be in the future?

Answer: Timber harvest in Washington and Oregon in the 1980's increased from a low of 10.6 billion board feet in 1981 to a high of 15.7 billion board feet in 1988. During this time, employment in the forest products industries in the 2 States increased from a low of 120,400 people in 1982 to 134,000 in 1988. Thus, harvest increased 48 percent while employment increased only 11 percent. Automation has resulted in the need for fewer employees to manufacture the same output. A study done at Portland State University found that of 6,643 jobs lost in the wood products industry in Oregon between 1977 and 1986, 3,776 were due to reduction in labor intensity in lumber and plywood production--57 percent of the total. The historical rate of increase in labor productivity has been 1.2 percent. We have little basis for projecting future productivity except to assume that the historical rate of increase will continue. In Washington and Oregon, the ratio of employees per million board feet of timber harvest is 10.6. Applying the labor productivity index to this number shows that the ratio was 11.9 per million board feet in 1980 and 13.5 in 1970. Changes in this ratio reflect changes in product mix over time as well as automation. For example, as the proportion of the harvest that is exported as logs increases, the ratio would tend to decline. Productivity increases in the future would tend to decrease this ratio. Increases in exports of finished products instead of logs would tend to increase it.

5. How much of the potential decline in harvest due to the Thomas Report could be mitigated by a ban of exports of state lands? By stricter substitution requirements on federal lands?

Answer: A ban on exports of softwood logs from State lands in Washington, Oregon, and California would affect about 560 million board feet of logs currently being exported per year. If all of this volume was be processed domestically, it would offset 44 percent of the decline in total harvest in 1995 and 21 percent in 2000. An estimated annual volume of 220 million board feet of logs is affected by direct and indirect substitution of logs from Federal lands for logs exported from private lands. If all of the affected volume from private lands was be processed domestically, it would offset 17 percent of the decline in total harvest in 1995 and 8 percent in 2000.

QUESTIONS SUBMITTED BY SENATOR MCCLURE AND WALLOP
FOR CHIEF ROBERTSON

1. According to preliminary estimates by economists in Oregon and Washington, 31,000 jobs will be lost in two states. This is more than your estimate for three states. Can you account for the difference?

Answer: After accounting for harvest responses from private lands, our analysis projects a loss of 13,272 jobs in 1995 and 28,165 jobs in 2000. We do not know the methods used in computing the loss of 31,000 jobs.

2. Your analysts assumed that the shortfall in timber supplies would be mitigated in part by increased harvesting by private forest landowners who respond to higher timber prices. Stumpage prices currently exceed the composite price for lumber. Clearly, this situation can not prevail very long before more mills close. In other words, implementing the conservation strategy will aggravate a distressed market condition and force more mill closures and more unemployment. How can you reconcile this possibility with your reasoning that increased harvesting on private lands will offset the economic impacts of preserving Habitat Conservation Areas, or HCAs?

Answer: The volume of lumber is board feet can exceed log volume in board feet by as much as 50% due to overrun resulting from new technology. Therefore, the total lumber value may exceed total log value even though the price per board foot of logs is higher. The geographic area affected by the ISC Strategy is among the most competitive in the world in terms of roundwood markets. The reductions in volumes of timber offered from Federal lands following implementation of the ISC Strategy will intensify this competition. Surviving mills will generally be the most efficient and the most competitive. Market responses to implementation of the ISC Strategy are based on historical behavioral relationships. These relationships are assumed to continue into the future. In the short term, increased harvest from private lands will offset some of the decline in Federal sales volume--for example, 48 percent in 1995. By 2000, however, there is no longer enough inventory on private lands to offset even part of the decrease in sales volume resulting from implementation of the ISC Strategy.

3. The volume of lumber in board feet can exceed log volume in board feet by as much as 50 percent due to overrun resulting from new technology. Therefore, the total lumber value may exceed total log value even though the price per board foot of logs is higher. The interagency economic team's analysis relies on a regional supply and demand model, known as Timber Assessment Market Model or TAMM, used in long-term projections for the Resources Planning Act or RPA. Given that TAMM is more useful for long term rather than short term projections and that TAMM actually flattens out short term volatility, isn't it a little insensitive to use TAMM for this purpose? Aren't you ignoring the fact that more people will be unemployed in the short run?

Answer: The Timber Assessment Market Model (TAMM) is the state of the art for an operational simulation model of the U.S. forest sector. Among its features is the ability to account for regional shifts in regional processing capacity in response to changing market conditions. Implementation of the ISC Strategy would set these shifts in motion and the model was selected for its capabilities to simulate effects of changes in regional timber supplies on the total U.S. timber market situation. Short-term, year-to-year harvest levels depend on economic conditions: The model projects an average trend rather than short-term fluctuations, and the results should provide for a picture of average annual employment after implementation of the ISC Strategy.

QUESTIONS SUBMITTED BY SENATOR MCCLURE AND WALLOP FOR CHIEF ROBERTSON AND BLM

1. Do you think the Thomas Report is credible? If so, why?

Are there other ways to protect spotted owl habitat and at the same time maintain the forest logging and products industry?

Answer: The Interagency Committee to Address the Conservation of the Northern Spotted Owl was established through an interagency charter signed by the Fish and Wildlife Service, Forest Service, Bureau of Land Management and National Park Service. The Committee was asked to develop a scientifically credible conservation strategy for the northern spotted owl. The Committee consisted of some of the most knowledgeable scientific experts on the spotted owl. They utilized the best scientific information available both from published and unpublished sources and contacted most of the scientists doing research on spotted owls in the process of developing this strategy. The Committee considered concerns of numerous experts and interviewed dozens of biologists and land managers. The Committee Report represents the most credible scientific information available at this time.

We do not know of another strategy that would be both scientifically credible and legally defensible.

2. How does the Forest Service propose to change the Region 6 Regional Guide, in light of the interagency committee report, by September 30, 1990, as section 318 requires?

Answer: It depends on what Fish and Wildlife Service does with the listing decision. Once they have made their decision we will do whatever we need to do to comply with the law.

3. When does the Forest Service plan to conduct public participation by September 30, 1990 for the Regional Guide amendment in Region 6?

Answer: It depends on the listing decision made by the Fish and Wildlife Service.

4. Outside of Region 6, have the agencies decided what are the appropriate procedural steps to follow in order to implement the interagency committee report or other owl management plan? For example:

- Will the Regional Guide for the Forest Service Region 5 have to be amended to include standards and guidelines for owl management?
- How many Region 5 forest plans will be affected?
- How does BLM plan to proceed?

Answer: Four northern California forests contain northern spotted owls, the Klamath, Six Rivers, Shasta-Trinity and Mendocino. After the Fish and wildlife Service makes a decision on listing of the northern spotted owl, the Forest Service will take the appropriate action. Your question concerning the BLM plans should be answered by the BLM.

5. Section 6(f)(5) of the National Forest Management Act (NFMA) requires the Forest Service to "revise" a forest plan whenever conditions have "significantly changed." Has the Forest Service determined whether implementation of the interagency committee report or other owl management plan would require revision of existing forest plans?

Answer: After the Fish and Wildlife Service has made its determination on listing, the Forest Service will evaluate the effects of the decision on the affected national forests. We will then make a decision as to the impacts of the decision on each national forest.

6. If the Forest Service will not revise existing forest plans, will it nonetheless amend those plans affected by the interagency committee report or other owl management plan?

Answer: It will depend on what the Fish and Wildlife Service decision on listing is.

7. Has the Forest Service considered whether implementation of the interagency committee report or other owl management plan without reexamining plan suitability allocations, as the report recommends, constitutes a violation of NFMA?

Answer: Yes.

8. Why is the Forest Service continuing to spend money to publish final forest plans when those plans will have to be amended, if not revised, after the interagency committee report or other owl management plan is adopted?

Answer: These are multiple use plans and there are many uses of the national forests addressed in these plans other than spotted owl habitat management. Management under the old plans is becoming increasingly difficult, and we believe that better overall resource management will result after adoption of the new Forest Plans. Congress has also urged their completion in Section 318.

9. If all interagency committee report recommendations were implemented, issuance of final plans now would prevent reexamination of suitability allocations in light of owl management, would it not?

Answer: Not necessarily. The impact of implementing ISC recommendations are not equal on all forests. The impacts would have to be studied on a forest by forest basis.

10. Under the Forest Service regulations, amendments to Regional Guides and Forest Plans that constitute "significant changes," as well as forest plan revisions, must be accompanied by an Environmental Impact Statement (EIS). Does the Forest Service plan to do an EIS for Region 6 before September 30?

Answer: The Forest Service will comply with the requirements of Section 318.

11. Does the Forest Service plan to do an EIS at all, or do you not believe that changes which result from implementation of the interagency committee report or other owl management plan will be significant?

Answer: The Forest Service will comply with the requirements of Section 318. However, the decision of the Fish and Wildlife Service on listing will affect this decision.

QUESTIONS SUBMITTED BY OREGON FOREST INDUSTRIES COUNCIL
FOR SENATOR MARK O. HATFIELD
FOR DR. THOMAS

1. What was the ISC's intent in including several hundred thousand acres of private forest land in Oregon within the proposed Habitat Conservation Areas?

Answer: Private lands were included within HCA boundaries 1) because they are intermingled with public lands and therefore, difficult to exclude on a large scale map and 2) because they provide some opportunity to public lands if managed on long enough rotations.

2. Very little "old growth" timber (by any definition) remains on private forest land in Oregon. If, in fact, the northern spotted owl is dependent on such areas for essential habitat, why are managed, second-growth forests included within the proposed Habitat Conservation Areas?

Answer: Managed second growth forests allowed to grow large enough to provide some dispersed habitat to cause owls to move between older stands.

3. A massive northern spotted owl inventory-survey effort is currently being conducted on private forest land -- again, primarily managed, second-growth stands -- throughout Northern California, Western Oregon, and Western Washington. What level of information or evidence would this effort have to produce to convince the ISC to reexamine the fundamental assumption in the report: that large blocks of forest land must be placed totally off-limits to all management activities to ensure the survival of the owl.

Answer: The Forest Service has been conducting intensive research and monitoring the status of the spotted owl for the past five years. The ISC used information from research on the spotted owl concerning over 20 years of study. It is unlikely that one year's inventory would convince the ISC to change their conclusions based on the amount of existing scientific information. However, continuing inventory, monitoring and research efforts over the next several years could result in different conclusions. And part of the ISC strategy, called adaptive management, recommends a process for implementing changes in the strategy over time.

4. The intent and scope of the recommended "50-40-11" management prescription for forest land outside Habitat Conservation Areas is not clear. Would this standard apply to all forest land outside HCAs? In either case, does the ISC suggest that this standard apply to private as well as public forest land?

QUESTION 5 FOR U.S. FISH AND WILDLIFE SERVICE REPRESENTATIVE

6. What information led you to conclude that half of the short term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

Answer: Our analysis showed that higher prices would result in increased harvest levels from private lands, based on available inventories of timber on private lands and on historic response of private landowners to price changes. Forest Service timber inventory data show a total of about 73 billion board feet of softwood timber age 40 and older on forest industry lands. For other private lands, total inventory in this age grouping is 35 billion board feet. Our base analysis (without implementation of the ISC Strategy) shows slightly more than half of this volume harvested; the remainder contributes to the increased private response under the ISC Strategy.

The private harvest response in 1995 is equal to about half the decline in Federal timber availability; therefore, the job loss would be cut in half. It is important to note that, since this increase in private harvest cannot be sustained, employment loss by 2000 is even greater than the loss from decreased Federal timber availability alone.

QUESTIONS SUBMITTED BY SENATOR BROCK ADAMS
FOR CHIEF ROBERTSON

1. I appreciate your concern about the economic impact of implementing the Thomas Spotted Owl plan. What is your recommendation regarding the implementation of this plan? If you don't think that it should be implemented, what changes would you recommend?

Answer: If the Fish and Wildlife Service announces that they intend to list the spotted owl as threatened, we will immediately ask for formal consultation under the ISC guidelines. We think it is important that we have a scientifically sound and legally defensible position and the ISC report is the best we have.

2. I would like to quote from the Thomas report and ask for your comment: "A balanced assessment of the impacts of this strategy must consider water quality, fisheries, recreation, soils, streamflows, scenic values, biodiversity, and other species of wildlife. All aspects of such a decision should be weighed in the balance. The issues are not limited to questions of owls and timber supply, as important as those are. The entire "spotted owl issue" is just one of many related concerns. All should be considered."

So far all we have seen in the way of an assessment is the estimated effects of the proposed plan on timber and associated jobs. What efforts are underway to conduct the more comprehensive assessment the Thomas report calls for, and when can we expect to see the results of such an assessment?

Answer: We are awaiting a decision by the Fish and Wildlife Service on listing of the owl. If the owl is listed it would propose adopting the guidelines, with fish and wildlife service approval, without additional study.

3. How do you propose to manage the lands in between the habitat conservation areas? Do you propose to continue managing them in the same manner that they have been managed in the past? Or would you recommend adding some of these areas to the timber base? I am thinking about areas currently managed for "scenic" or "riparian" values.

Answer: If the ISC guidelines are used by the Forest Service for interim management of the spotted owl we would determine whether any changes in land allocation should be made through the Forest plan amendment process. This would have to be accomplished within the recommendations of the ISC guidelines which recommend that, in general, allocations should remain the same.

4. I have some specific questions regarding the calculations of economic impacts resulting from the implementation of the Thomas report:

a. Does the analysis evaluate any increase in timber supply from restricting log exports in Washington, Oregon, and California? Do the agencies intend to estimate the reduced job losses associated with various levels of log export restrictions?

Answer: The analysis did not evaluate the effects of restricting log exports on employment and revenues. The report does display, for a ban on log exports from State lands in Washington and Oregon and a ban on all softwood log exports in these two States, effects on U.S. imports of softwood lumber from Canada, regional production of softwood lumber and plywood, regional stumpage prices, and other measures of timber markets.

The Forest Service has done a preliminary analysis of employment effects from a ban on exports of logs from State lands in Washington, Oregon, and California. The ban would affect some 560 million board feet of logs currently being exported per year. On the average, domestic processing adds about 4 additional jobs per million board feet. If all of this volume were to be processed domestically, it would add 2,240 additional direct jobs and 2,240 indirect jobs for a total of 4,480 jobs. This would offset 33 percent of the decline in employment in 1995 after implementation of the ISC Strategy and 16 percent in 1995.

b. Is it fair to characterize your study of the economic impacts as a worst case scenario absent any legislative and policy efforts that could increase timber supply or help local communities adjust?

Answer: The study does not assume any additional legislative or policy efforts that could increase timber supply or help local communities adjust. The study is not a worst case scenario in that, in general, historical timber market relationships are assumed to continue into the future.

c. In projecting potential job losses, did you include projections of job losses associated with the changes in the industry such as increased automation? Were those separated from the job losses resulting from spotted owl protection? Was there any evaluation of the potential increase in timber supply from small non-industrial forest lands that could be obtained from tax incentives or other legislation that would encourage more production and better stocking of these lands?

Answer: The economic effects report did acknowledge that improvements in productivity could be expected in the future, but did not attempt to estimate them. If the historical rate of productivity improvement of 1.2 percent per year continues into the future, job losses would be greater than shown in the analysis. After accounting for the effect of technology, there would be a loss of 13,999 jobs in 1995 and 32,001 in 2000. The report, which did not contain this technology estimate, showed a loss of 13,272 in 1995 and 28,165 in 2000.

There was no evaluation of the potential increase in timber supply from small non-industrial forest lands that could be obtained from tax incentives or other legislation that would encourage more production and better stocking of these lands.

d. Did your study evaluate any potential benefits to current or future tourism and recreation by retaining a substantial amount of these old growth forests?

Answer: No, the study considered only those economic effects associated with changes in timber harvest.

e. The Thomas Report mentioned that the recommended set asides while specifically for spotted owls would also provide benefits to the region in terms of watershed protections, fisheries, and other values. Does your analysis include any effort to quantify what those benefits may be?

Answer: No, except for effects related to the timber economy, the study did not attempt to quantify benefits or losses to other resources or resource uses.

QUESTIONS SUBMITTED BY MARK HATFIELD
FOR CHIEF ROBERTSON

IMPLEMENTATION

1. Chief Robertson, on page 3 of the Thomas Report, the ISC recommends abandoning the current owl management system based upon the establishment of Spotted Owl Habitat Areas (SOHAs) in favor of protecting larger, unfragmented blocks of forest for owl habitat. These areas would be the so-called Habitat Conservation Areas (HCAs).

Chief, in light of the economic impact assessments prepared by the Forest Service and BLM, as well as by the State of Oregon. What analysis has the Forest Service done since the release of the Thomas Report to substantiate, modify, or reject this recommendation?

Answer: The Interagency Scientific Committee, headed by Dr. Jack Ward Thomas, was established through an interagency charter to develop a scientifically credible conservation strategy for the northern spotted owl. The Committee consisted of some of the most knowledgeable scientific experts on the spotted owl. They utilized the best scientific information available and contacted most of the scientists doing research on spotted owls in the process of developing their strategy. The Committee Report represents the latest and most credible scientific information available at this time. We see no need to substantiate the scientific basis of their work. A decision on whether to adopt, modify, or reject the Committee recommendations will not be made until the U.S. Fish and Wildlife Service makes their listing decision on June 23, 1990.

2. Do you agree with the Thomas Committee that the SOHA system be abandoned? What is the basis, beyond the ISC recommendation, for your position?

Answer: If the Thomas Report recommendations are adopted, the Habitat Conservation Area system would replace much of the SOHA system. If the owl is listed as threatened, we would consult with the Fish and Wildlife Service on habitat management for the northern spotted owl. If, as a result of consultation, it is determined that the the SOHA system be abandoned, we will seriously consider that option.

3. Chief, if the Thomas recommendations are adopted as part or all of a recovery plan or modified Record of Decision, do you agree that the allocations made in the draft and final forest plans should be adjusted to accommodate these recommendations?

Answer: If the Thomas recommendations are adopted as part of a final recovery plan or as a new Record of Decision for Region 6, the affected forest plans would have to be reviewed and amended as appropriate. This could entail adjustment of allocations.

4. Your economic impact numbers were based upon final forest planning decisions. Doesn't this mask the actual impacts, since final forest planning baselines (in terms of timber harvest levels, management prescriptions, etc.) are somewhat lower than current levels: Do the owl impact numbers assume no changes in final plan allocations?

Answer: The starting point for the economic effects analysis is based on timber volume in existing plans, which closely approximates average Federal timber harvest during the decade of the 80's. On a year-to-year basis, in response to market forces and other economic conditions, harvest may fluctuate above or below the long-term sale level, and employment fluctuates with these changes in harvest. The study does not begin at the high harvest levels of recent years, but does accurately state the impacts of moving from current planned levels of harvest to levels associated with implementation of the Interagency Scientific Committee report. It therefore accurately reflects the impact on long-term sustainable employment.

Although the starting point for the economic effects analysis was timber volume associated with current plans, the impacts shown in the report are based on a volume well below this starting point and below the expected final forest plans. The timber volume in current plans for National Forests affected by the spotted owl is 3.8 billion board feet, final plans are projected at about 3.2 billion board feet (plus or minus 10 percent), and the volume with implementation of the Interagency Scientific Committee Conservation Strategy is 2.2 billion board feet.

5. All Westside national forests in Oregon have finished draft forest plans. Only two (Siuslaw and Siskiyou) have approved final forest plans. In theory, the four other westside forests (Mt. Hood, Williamette, Umpqua, Rogue River) operate under their Timber Resource Plans or Land Use Plans approved in the mid 1970's until their final forest plans are approved.

For land "suited for timber productions", the Thomas report states,

> "..retain existing considerations for other resource values such as wildlife trees and downed-wood retention" (page 348).
>
> In the report's endorsement of federal forest plans, precisely what "present direction of management" and "existing considerations are you referencing for the national forests? Does "present direction" and "existing considerations refer to (1) the forest resource plans approved in the mid-1970's; (2) the current draft forest plans; or (3) the proposed direction in the final forest plans?

Answer: "Present direction" and "existing considerations" referred to in the Thomas report references the proposed direction in final forest plans.

6. What information led you to conclude that half of the short-term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

Answer: Our analysis showed that higher prices would result in increased harvest levels from private lands, based on available inventories of timber on private lands and on historic response of private landowners to price changes. Forest Service timber inventory data show a total of about 73 billion board feet of softwood timber age 40 and older on forest industry lands. For other private lands, total inventory in this age grouping is 35 billion board feet. Our base analysis (without implementation of the ISC Strategy) shows slightly more than half of this volume harvested; the remainder contributes to the increased private response under the ISC Strategy.

The private harvest response in 1995 is equal to about half the decline in Federal timber availability; therefore, the job loss would be cut in half. It is important to note that, since this increase in private harvest cannot be sustained, employment loss by 2000 is even greater than the loss from decreased Federal timber availability alone.

7. Have you developed a position on whether to accept the Thomas Plan as recommended? Is there any truth to the rumor that listing the owl by Fish and Wildlife is being advocated so that the Thomas Plan could be adopted as a recovery plan? What are the advantages of such an approach? What are the disadvantages?

Answer: The decision on whether to adopt the Thomas Plan as recommended will be made following the decision made on June 23, 1990 by the U.S. Fish and Wildlife Service on whether to list the owl as threatened. While listing the owl is not being advocated in order to adopt the Thomas Plan, if the owl is listed, the Thomas Plan may provide a starting point for development of a recovery plan. If this is an acceptable approach to the U.S. Fish and Wildlife Service, it could shorten the time needed to develop a final recovery plan.

8. It has come to my attention that the Administration is considering making a listing decision prior to June 23rd. What are the advantages of making this decision before the one-year deadline? What are the disadvantages? Chief? Mr. Jamison? Mr. Turner?

Answer: The one year period is a maximum deadline, not a minimum. The advantage of an early decision is that it eliminates the uncertainty of trying to plan a timber sale program without knowing what areas should be protected for the owl. The longer the listing decision takes, the more timber will be sold that may have to be bought back, and the more timber sale planning will be completed that may need to be redone. The disadvantage of early listing is the possibility of increased impact to existing timber sales and resultant economic effects.

9. An assumption was made that the private and industrial lands will mitigate up to half the immediate job losses in the short-term (5-10 years). With the already high rate of private harvest, and public pressure to reduce harvest on private lands, how realistic is this assumption? Doesn't the fact that a listing decision will affect volume from private lands diminish because of reductions in federal timber supply?

Answer: The projected harvest levels from private lands are based on available inventories of timber on private lands and on historic response of private landowners to price changes. The data used in the analysis were totals for all of western Washington and Oregon and all of eastern Washington and Oregon. It appears that most of the opportunity for private response would be in Washington and northwest Oregon; these areas contain the greatest acreages of softwood timber inventory over 40 years of age. It is important to note that the Forest Service analysis shows that private lands cannot continue to offset reductions in Federal harvest, and that by 2000 private harvest would also be expected to decline.

10. In many cases, stumpage prices are already significantly higher than finished products values. Does the assumption that increases in stumpage prices will offset lost revenues ignore the record high prices currently being bid?

Answer: The geographic area affected by the ISC Strategy is among the most competitive in the world in terms of roundwood markets. The reductions in volumes of timber offered from Federal lands following implementation of the ISC Strategy will intensify this competition. Surviving mills will generally be the most efficient and the most competitive. Market responses to implementation of the ISC Strategy are based on historical behavioral relationships. These relationships are assumed to continue into the future and lead to the price projections in the report.

11. The Bull Run Watershed on the Mt. Hood National Forest was included in Oregon HCA Number 0-1 in the maps which accompanied the Thomas Plan. Bull Run must, under Public Law 95-200, continue to supply high quality water for the Portland metropolitan area. Also, the Thomas Plan assumes no salvage operations would be allowed within HCAs.

Since the Forest Service and the City of Portland advocate such salvage operations as a means to maintain Bull Run's water quality, what alternatives would you suggest to allow for the protection of both water quality and the owl?

Answer: We do not believe there is an inherent conflict with the maintenance of high quality water and protection of owl habitat. In fact, the two goals should complement each other in most instances. While the Thomas Report guidelines in general prohibit salvage of downed or standing dead trees, they do provide for special situations where salvage activities may be approved by an interagency group organized to review implementation of the conservation strategy (p. 347). If the guidelines are adopted, the situation in the Bull Run watershed would have to be evaluated on this basis. In addition this issue would be evaluated through consultation with the Fish and Wildlife Service.

(on behalf of Governor Deukmajian)

12. Where HCAs are in federally designated Wilderness Areas or National Parks, will agencies aggressively control wildfire if the HCAs are threatened?

Answer: Since HCAs would be administratively established and wilderness areas are congressionally established and must be managed under provisions set forth by law, any HCAs in wilderness areas would be managed according to what management activities are allowed in wilderness areas. Under the law, control of fire, as the Secretary deems desirable, is allowed.

(on behalf of Governor Gardner)

13. What will be the impact of immediate implementation of the ISC strategy on other forest resources, such as roadless areas, other wildlife needs, old growth outside of HCAs?

Answer: There should be no immediate effect of implementation of the ISC guidelines on roadless areas, other wildlife needs or old growth outside of HCAs. If, through the Forest plan amendment process, allocations are changed, there could be some impact to these resources. The specific effects can only be determined on a forest-by-forest basis through the amendment process.

14. Could enough timber sales be scheduled outside HCA, given cumulative effects constraints, including 50-11-40, to meet the projected ASQ?

Answer: The Forest Service, Regions 5 and 6, can schedule enough sales outside the HCA's given the cumulative effects constraints to meet 2,173 million board feet, but cannot meet the actual or projected final planned ASQ for 3,200 million board feet.

15. The (economic analysis) report uses draft and final Forest Service plans as the basis for measuring the effects on employment. Is this the proper base for displaying the true economic impacts on the currently economy?

Answer: The starting point is supported in two ways. First, it represents the timber volume in current plans for these National Forests--some plans are in draft stage and some are final. Therefore, based on these current plans, the starting point represents the timber harvest level that could be sustained over time; changes to get to these levels are already expected--they are not something new as a result of the ISC Strategy. Using this rationale, a case could be made for using anticipated timber volume in final forest plans as a starting point. We have shown this as an interim step in the report.

Second, the starting point approximates the average level of harvest during the past decade. Timber harvest fluctuates in the short term depending on economic conditions. Recent harvests are at a high level; during the early 80's, harvest levels were at a low point. The timber volume used as a starting point therefore represents the average of these levels, which in turn does not represent an unusually high or unusually low level of timber-based employment.

Use of the higher current harvest level would show a greater employment impact resulting from implementation of the ISC Strategy. However, if economic conditions similar to those experienced during the early 80's were to occur, and an analysis done at that time, little comparative impact would be shown. Therefore, a recent average is more representative of the harvest level in the three States.

16. An assumption was made that the private and industrial lands will mitigate up to half the immediate job losses in the short-term (5-10 years). With the already high rate of private harvest, and public pressure to reduce harvest on private lands, how realistic is this assumption?

Answer: The projected harvest levels from private lands are based on available inventories of timber on private lands and on historic response of private landowners to price changes. The data used in the analysis were totals for all of western Washington and Oregon and all of eastern Washington and Oregon. It appears that most of the opportunity for private response would be in Washington and northwest Oregon; these areas contain the greatest acreages of softwood timber inventory over 40 years of age. It is important to note that the Forest Service analysis shows that private lands cannot continue to offset reductions in Federal harvest, and that by 2000 private harvest would also be expected to decline.

17. How would the 50-11-40 rule, 80-acre requirements for pairs outside HCAs, and the elimination of SOHAs outside the NCA strategy overall impact ASQ projections?

Answer: The ASQ would drop from the projected plan level of 3,200 million board feet to 2,173 million board feet on the 17 owl forests with the implementation of the full ISC Strategy.

18. The (economic analysis) report assumes that, on the average, one million board feed equates to 11.7 jobs. Would you rate your multiplier as liberal or conservative?

Answer: The study estimates of employment are based on the input/output model, IMPLAN. For the purposes of analysis of economic effects, IMPLAN models were constructed for each local economy affected by the activities of a particular National Forest. The total number of jobs lost as a result of reductions in Federal harvests are estimated as the sum of all jobs affected in the local economies.

All calculations involving IMPLAN used relationships derived from mostly 1982 data. The IMPLAN model uses data from several sources and any updating of economic relationships is at the mercy of other agencies. For example, the 1982 National Income and Product accounts have yet to be converted into a 1982 National Input-Output model which would be key to a thorough update of IMPLAN. There are various ways to update parts of the IMPLAN model, but updating of economic relationships that determine employment changes cannot be done until the appropriate data are available. The year 1982 saw a severe recession in the timber industries with both production and employment at low points. The concern about the use of 1982 data is that employment per unit of output relationships may not accurately reflect current practice. Relationships based on 1982 data would probably tend to be too high rather than too low as compared with current practice. In our analysis, this would tend to lead to overestimates of the number of jobs lost.

The economic effects report did acknowledge that improvements in productivity could be expected in the future, but did not attempt to estimate them. If the historical rate of productivity improvement of 1.2 percent per year continues into the future, adoption of technology would mean that some of the job loss shown in the economic effects report would occur even without the ISC Strategy. The net effect of the ISC Strategy after accounting for technology would be a loss of 12,545 jobs in 1995 and 24,329 jobs in 2000. The report, which did not contain this technology estimate, showed a loss of 13,272 in 1995 and 28,165 in 2000.

19. Does the assumption that increases in stumpage prices will offset lost revenues ignore the record high prices currently being bid? (In many cases, stumpage prices are already significantly higher than finished product values.)

Answer: The starting point prices used in the economic effects were average stumpage prices for 1989. The geographic area affected by the ISC Strategy is among the most competitive in the world in terms of roundwood markets. The reductions in volumes of timber offered from Federal lands following implementation of the ISC Strategy will intensify this competition. Surviving mills will generally be the most efficient and the most competitive. Market responses to implementation of the ISC Strategy are based on historical behavioral relationships. These relationships are assumed to continue into the future and lead to the price projections in the report.

(on behalf of the Oregon Forest Industries Council)

20. What information led you to conclude that half of the short-term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

Answer: Our analysis showed that higher prices would result in increased harvest levels from private lands, based on available inventories of timber on private lands and on historic response of private landowners to price changes. Forest Service timber inventory data show a total of about 73 billion board feet of softwood timber age 40 and older on forest industry lands. For other private lands, total inventory in this age grouping is 35 billion board feet. Our base analysis (without implementation of the ISC Strategy) shows slightly more than half of this volume harvested; the remainder contributes to the increased private response under the ISC Strategy.

The private harvest response in 1995 is equal to about half the decline in Federal timber availability; therefore, the job loss would be cut in half. It is important to note that, since this increase in private harvest cannot be sustained, employment loss by 2000 is even greater than the loss from decreased Federal timber availability alone.

QUESTIONS SUBMITTED TO SENATOR HATFIELD
FOR THE SIERRA CLUB

1. Does the analysis evaluate any increase in timber supply from restricting log exports in Washington, Oregon, and California. Do the agencies intend to estimate the reduced job losses associated with various levels of log export restrictions?

Answer: The Economic Effects Report did not consider the effects of restrictions on log exports on regional employment. A ban on exports of softwood logs from State lands in Washington, Oregon, and California would affect about 560 million board feet of logs currently being exported per year. If all of this volume would be processed domestically, it would offset 44 percent of the decline in total harvest in 1995 and 21 percent in 2000. An estimated annual volume of 220 million board feet of logs is affected by direct and indirect substitution of logs from Federal lands for logs exported from private lands. If all of the affected volume from private lands would be processed domestically, it would offset 17 percent of the decline in total harvest in 1995 and 8 percent in 2000. We estimated that if these logs were processed domestically rather than exported, about 6000 additional jobs would be created.

2. Isn't it true that the increase in private timber supply in the short-run estimated in your study is strictly the result of market induced responses due to higher timber prices? That there has been no evaluation of the potential increase in timber supply from small non-industrial forest lands that could be obtained from tax incentives or other legislation that would encourage more production and better stocking of these lands?

Answer: The increase in private timber harvest shown in the report for 1995 is based on response to higher prices. There was no evaluation of the potential increase in timber supply from small non-industrial forest lands that could be obtained from tax incentives or other legislation that would encourage more production and better stocking of these lands.

3. Did your analysis evaluate any potential benefits from legislation of policy initiatives that could provide economic aid and encourage economic diversification for impacted communities?

Answer: Our economic analysis looked only at the economic effects of implementing a conservation strategy for spotted owl. We are continuing to study what those effects are and how they can be mitigated. The Pacific Northwest Region has developed a "Pacific Northwest Strategy" designed to try and help communities dependent on federal timber and where the Forest Service can play a larger role in community activities.

4. Did your study evaluate any potential benefits to current or future tourism and recreation by retaining a substantial amount of these old growth forests?

Answer: No, the study considered only those economic effects associated with changes in timber harvest.

5. The Jack Ward Thomas report mentioned that the recommended set-asides while specifically for spotted owls would also provide benefits to the region in terms of watershed protection, fisheries, and other values. Does your analysis include any effort to quantify what those benefits may be?

Answer: No. The report did not attempt to quantify benefits or losses to other resources or resource uses.

6. In projecting potential job losses, did you first project likely job losses associated with the ongoing transition and increased automation of the timber industry, and subtract these from the total job losses you project?

Answer: The economic effects report did acknowledge that improvements in productivity could be expected in the future, but did not attempt to estimate them. If the historical rate of productivity improvement of 1.2 percent per year continues into the future, job losses would be greater than shown in the analysis. After accounting for the effect of technology, there would be a loss of 13,999 jobs in 1995 and 32,001 in 2000. The report, which did not contain this technology estimate, showed a ~~loss~~ loss of 13,272 in 1995 and 28,165 in 2000.

7. In light of this information is it fair to characterize your study as a worst case scenario that projects job losses absent any effort to control log exports, and other legislative and policy efforts that could increase timber supply or help local communities adjust? SO one could look at your findings as not a picture of the future but a portrait of the challenge we face to make sure these projections do not occur.

Answer: The study does not assume any additional legislative or policy efforts that could increase timber supply or help local communities adjust. The study is not a worst case scenario in that, in general, historical timber market relationships are assumed to continue into the future.

QUESTIONS SUBMITTED BY MARK HATFIELD
FOR NORTHWEST FOREST RESOURCE COUNCIL

1. How do you intend to integrate the Thomas report into the final forest plans?

Answer: If the spotted owl is listed under the Endangered Species Act the determination has been made that the species is in danger of extinction and it is therefore not a viable population, at least not viable as defined by the NFMA regulations. Once a species is listed, all federal agencies must comply with the requirements of the Endangered Species Act, as determined by the Fish and Wildlife Service. Therefore, once a species is listed under the ESA, the viability requirement of 36 CFR 219.19 are superseded by the nondiscretionary requirements of the ESA.

2. Do you plan on amending the Regional Guide to accomplish this in both Regions 8 and 6?

Answer: If we are operating under the ESA we will enter into consultation with the FWS for all proposed actions that may affect the spotted owl. We assume that this question referred to Regions 5 and 6, not Region 8.

3. Will the areas currently involved in your 1988 ROD for the spotted owl network be released when or if the Thomas report is adopted?

Answer: One of the options we have considered would be the removal of SOHA designations.

a. Will you prepare timber sales for fiscal year 1991 in those areas?

Answer: Only if the option mention above is adopted. Until FWS has made a decision of listing the spotted owl, we can't determine what will be available for timber harvesting.

4. How do you intend to comprehensively re-evaluate all of the multiple use land allocations in your forest plan in light of the new owl habitat requirements?

Answer: If the owl is listed we will review our options under the context of consultation.

5. Governor Goldschmidt of Oregon wrote to you on May 7 concerning the Oregon State alternatives to the forest plans. He stated at the time that the state could not continue to prepare its alternatives for forest plans in western Oregon until they knew how the owl issue would be resolved. He went on to say that they could not deal with allocations for scenic, recreation, oldgrowth, timber production, and other purposes without resolution of the owl issue.

Goldschmidt indicated that he believed the same logic that prevented the state from making recommendations on the forest plans would also hold true for the Forest Service as well. He encouraged you to direct your agency to withhold adoption of forest plans for these owl forests. What is your position on this matter?

Answer: The Forest Plans are tools for managing for all the various resources of the National Forests, and thus contain standards and guidelines for a variety of uses. We believe that it is imperative, and the Congress has agreed in Section 318, that we should complete the Forest Plans. If the spotted owl is listed we will amend Forest Plans as necessary~~, as~~ envisioned in the National Forest Management Act.

6. You recently reported to Congress on the economic impact of implementing the Thomas report. Are there not even additional impacts associated with implementing final forest plans that you did not include in your owl impact analysis? What are they and what is the cumulative economic impact?

Answer: The Economic Effects report included the impacts of changing from current plans to implementation of the Thomas Report. An interim step was shown to reflect timber volume for projected final forest plans. The cumulative effects included in the report are shown below:

	Current Plans	Actual or Projected Final Plans		Actual or Projected Final Plans plus ISC Strategy	
		1995	2000	1995	2000
Jobs (thousands)					
F.S.	40,770	34,523	34,523	23,090	23,090
BLM	12,470	12,470	12,470	4,741	4,741
Total	53,240	46,993	46,993	27,831	27,831
Timber Revenue (mil. $)					
F.S.	718	812	791	690	618
BLM	306	396	412	186	176
Total	1024	1208	1203	876	794
Payments to States (mil. $)					
F.S.	157.7	178.1	173.2	149.6	133.4
BLM	161.8	205.2	213.1	95.7	91.1
Total	319.5	383.3	386.3	245.3	224.5

7. Jack Ward Thomas testified to congress that it was not necessary to alter sales planned under the Hatfield Adams 318 of the Appropriations bill of last year, but we have an interim direction from you indicating that you will modify sales with HCAs. Why the inconsistency?

Answer: See the Interagency Scientific Report (ISC), Appendix Q, page 325. The ISC report states, "prohibit timber harvest of any age class of forest except: sale units presently under contract, that are more than 1/2 mile from center of activity of a known pair. Modify sales or sale units that are within 1/2 mile of pairs; substitute sales outside the HCA for any currently planned but unsold timber sales for FY 1990. If is ~~not~~ an option follow the stipulations followed above."

QUESTIONS SUBMITTED BY MARK HATFIELD
FOR CHIEF ROBERTSON

1. Will it be possible to construct a new dam and create a new reservoir in this habitat conservation area?

Answer: Construction of a dam and reservoir is not expressly forbidden by the Thomas Report guidelines. These types of activities would need to be evaluated on a case-by-case basis if the guidelines are adopted. A project such as a dam would also go through formal consultation with the Fish and Wildlife Service if the spotted owl is listed.

2. Will it be possible to reduce fire danger, and therefore the threat to high quality water, by conducting blowdown salvage in this habitat conservation area?

Answer: While the Thomas Report guidelines in general prohibit salvage of downed or standing dead trees, they do provide for special situations where salvage activities may be approved by an interagency group organized to review implementation of the conservation strategy (p. 347). If the guidelines are adopted, the situation in the Bull Run watershed would have to be evaluated on this basis. In addition we would likely consult with the Fish and Wildlife Service if the spotted owl is listed.

3. Will it be possible to conduct stream channel rehabilitation or landslide rehabilitation in this habitat conservation area?

Answer: There does not appear to be any prohibition of these types of activities in the Thomas Report guidelines. Again, these projects would need to be evaluated on a case-by-case basis in consultation with the Fish and Wildlife Service if the spotted owl is listed.

4. If the answer to one or more of these questions is "not under the present concept of an HCA" or "maybe", then what kind of guidelines can be written for creation or management of this HCA that will ensure that we can both protect the owl habitat in the Bull Run and provide for a continued supply of high quality water?

Answer: We do not believe that there is an inherent conflict between protection of owl habitat and maintenance of a high quality water supply from the Bull Run Watershed. Specific projects compatible with both resources need to be evaluated on a case-by-case basis if the guidelines are adopted. There appears to be sufficient flexibility to review specific projects through an interagency oversight committee to cover each of the situations posed.

United States
Department of
Agriculture

Forest
Service

Forestry and Range
Sciences Laboratory

1401 Gekeler Lane
La Grande, OR 97850
(503) 963-7122

Reply to 4000

Date August 3, 1990

Senator Dale Bumpers, Chairman
Subcommittee on Public Lands, National Parks and Forests
Committee on Energy and Natural Resources
Washington, D.C. 20510-6150

Dear Senator Bumpers:

Attached are the answers to the 176 questions submitted to me for written response to be included with the record for the hearing held on May 23, 1990, on "The Report of The Interagency Committee to Address The Conservation of The Northern Spotted Owl."

Respectfully yours,

JACK WARD THOMAS, Chairman
Interagency Scientific Committee

cc: Mr. Dale Robertson, Chief USDA Forest Service
Mr. Cy Jameson, Director, BLM
Mr. James Ridenous, Director, National Park Service
Mr. John Turner, Director, U.S. Fish and Wildlife Service

ANSWERS TO QUESTIONS SUBMITTED TO THE INTERAGENCY SCIENTISTS COMMITTEE BY THE UNITED STATES SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES, SENATOR DALE BUMPERS, CHAIRMAN.

FOR THE RECORD OF THE HEARING HELD MAY 23, 1990

SUBMITTED BY JACK WARD THOMAS, CHAIRMAN, INTERAGENCY SCIENTISTS

Questions Submitted by Senator Dale Bumpers

1. QUESTION. "Did the Committee look at alternative conservation strategies prior to choosing the one put forward in the Report? Why was this one chosen? Did the other alternatives offer greater or less protection?"

ANSWER. The Interagency Scientific Committee (ISC) considered a variety of strategies some of which offered greater protection and others less protection than the one we advocate. The strategy was selected on the basis that the six scientists that were signatories (the ISC team was composed of 17 members) were collectively satisfied that the strategy was scientifically credible and sufficient to provide for a secure population of northern spotted owls, well distributed throughout their range, for the next one hundred years. The conservation strategy is in fact an amalgam of strategies: large habitat blocks where possible, smaller blocks where necessary, blocks well-connected by appropriate habitat, and an adaptive management plan to test the development of innovative silviculture to provide spotted owl habitat in a managed forest context. The alternate strategies considered (including those described in Forest Service's Supplemental Environmental Impact Statement [FSEIS] either offered inadequate protection to the owl or were much more impacting on the annual sale quantity without commensurate increases in protection for the owl.

2. QUESTION. "Is there concurrence among spotted owl experts that the Committee's conservation strategy is the best one for protecting the owl?"

ANSWER. No. Most, if not all, spotted owl experts (including those on ISC) agree that cessation of all harvest of suitable owl habitat and the soonest possible recruitment of additional suitable habitat would be best for the owl. Even under the strategy presented, the probability of the success of the plan would be enhanced by creating larger Habitat Conservation Areas (HCAs) to contain more pairs, putting HCAs closer together, and requiring more mature forest stands between HCAs.

3. QUESTION. "Did you consider economic impacts when you arrived at your recommendations?"

ANSWER. Yes, qualitatively so. Please see answer to question number 2. The best strategy to insure owl welfare was cessation of all harvest of suitable habitat. We derived a strategy far less sweeping to account for economic and social realities and existing habitat conditions.

We feel, however, that the strategy presented will, if followed, insure a high probability of maintaining a viable population well distributed within the range of the subspecies over a 100-year period.

4. QUESTION: "You state in your report that owl habitat has been steadily declining with harvesting of old-growth timber. Has there been a corresponding decline in the numbers of spotted owls?"

ANSWER. Northern spotted owls are closely associated with old-growth forests of several types. There is little doubt that spotted owl numbers have declined as the amount of suitable habitat has declined. Whether or not the decline has been in direct proportion to habitat decline is less certain. Some have argued that stands of suitable habitat at lower elevation on more productive sites may well have supported greater densities of owls due to greater abundance of prey related to higher site productivity and milder climates at lower elevations.

Nearly all old-growth timber stands on such low elevation sites have been logged leaving old-growth timber at relatively higher elevations and on steeper ground. Thus, a greater proportion of the probable numbers of spotted owls have been lost from such areas.

5. QUESTION. "At a recent House joint subcommittee hearing, Dr. Jerry Franklin, Chief Plant Ecologist in Region 6, characterized your committee's report as a minimal risk plan and suggested experimentation with 'new forestry'

within some of the prepared HCAs might constitute an acceptable level of risk, Would you care to respond?"

ANSWER. The conservation strategy we advocate is not, by any stretch of the imagination, a "minimal risk plan." Some 60 to 70 percent of the habitat (and, perhaps, more) for the subspecies has disappeared over the last 90-100 years with, it can be most reasonably assumed, a similar or greater decline in population. In addition, the proposed conservation strategy anticipates the loss in a worst-case scenario of perhaps 50 percent of the population extant in 1990. Such cannot be characterized as a minimal risk plan. The proposed strategy makes tens of thousands of acres of suitable habitat available for harvest or experimental manipulation that were reserved in Spotted Owl Habitat Areas (SOHAs) outside the boundaries of HCAs. Experimentation with "new forestry" can and should take place in those areas. The strategy calls for such experimentation. Such experimentation should not take place in HCAs until silvicultural methods are proven to provide results in keeping with spotted owl conservation.

6. QUESTION. "Would you support a gradual phase-in of your plan, as has been suggested by some parties?"

ANSWER. We are not clear as to what the consequences to our strategy of a "gradual phase-in" would be, as we cannot tell from the question what such would entail. If a "phase-in" involved making additional timber sales in HCAs or reduction in the quantity or quality of dispersal habitat as described in the strategy, it would produce a decreasing effectiveness of the strategy and increasing risk for the owl. We would not support that. The greatest threat to spotted owls at this time is the concomitant loss of habitat and fragmentation of habitat due to logging leading to increasing isolation of pairs from other pairs. We are concerned that this situation would worsen under a "gradual phase-in."

7. QUESTION. "Would your plan benefit other species besides spotted owls?"

ANSWER. Yes. The proposed strategy would benefit all species associated with mature and old-growth habitats and those favored by the same habitat structure that produces suitable habitat for spotted owls. However, it should be noted that we recommended adaptive management as part of our strategy whereby it may be that spotted owl habitat of the future would be provided for in managed forests and the HCAs abandoned. How such a scenario, if and when it did become a reality, would influence other species is much less certain.

The Forest Service publication Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington reports that 206 vertebrate wildlife species feed and 207 species breed in old-growth forests in western Oregon and Washington. A much smaller number of species have a primary association with old growth. The northern spotted owl was chosen by the Forest Service as an "indicator species" for old-growth ecosystems and their associated vertebrate fauna. However, it is unclear to what extent other species would benefit from actions to benefit spotted owls. In particular, it is unknown how the spacing patterns between HCAs would effect the long-term viability of other species.

8. QUESTION. "The Director of BLM has stated that he wants his staff to re-examine the spotted owl situation on the lands his agency manages to see what other options exist besides your plan. What do you think about this?"

ANSWER. We applaud any "better way" or "better options" that can be developed. We assume, however, that: these other options will be equally as well based in science as the ISC report; all thought processes and assumptions will be as carefully documented; the names and credentials of the developers will be revealed; scientific peer review will be conducted and made available for scrutiny; the plan will be developed using a fully open process wherein all concerned may observe the deliberations. It will also require that alternate strategies be fully evaluated in terms of the long-term probability of supporting a viable population of northern spotted owls. Short-term plans are not the biological question. Short-term protection of pairs of owls is not an adequate scientifically credible substitute for development of a long-term strategy. The shortcomings that are inherent in such a short-term plan are carefully documented in the ISC reports. Such short-term "fixes" can give the illusion of protection of the owl while actually doing severe damage to long-term chances of survival. We defined "long term" as measuring at least a century. For long-lived species like the spotted owl that also reproduces at a low rate, long term might better refer to multiple centuries to facilitate evolutionary change.

We look forward to examining any options that may be superior to the strategy we have prepared. If they are indeed superior, the ISC will quickly recommend adoption of the alternate strategy in place of the one we have suggested. But, the "Jameson Plan" put forward by BLM does not contain sufficient detail nor the exposure of developers and reviewers necessary for examination as to scientific credibility or chances of success.

9. QUESTION. "It has been suggested that your plan be implemented in parts of the owl's range while in other areas, such as on the Olympic Peninsula, a different approach be taken. What do you think of this idea?"

ANSWER. We do not agree. We feel that the approach we have suggested is just as applicable to the Olympic Peninsula as it is elsewhere in the range of the owl. In our deliberations we discussed other approaches for areas like the Peninsula and decided that they either involved too much risk for the owl or were so restrictive that they stopped all timber harvest. Further, it is impossible for us to evaluate "a different approach" unless we know exactly what that approach is. We make no claim to infallibility, and there may be a different means of insuring the owl's survival. But, if there is, we were not able to uncover it. We should acknowledge that chances for success of the strategy would be well served by increasing the number and size of HCAs, decreasing distance between HCAs, and maintaining more older forests between HCAs.

10. QUESTION. "Would you feel comfortable allowing some experimentation with 'new forestry' in the habitat conservation areas?"

ANSWER. No. Please see the answer to question number 5. We discussed this at length and agreed that the best approach would be to concentrate such research in forested areas outside the HCAs where there will be numerous opportunities to conduct research. At least half of the known owl population and much high-quality habitat occur outside of HCAs. The notion that such research cannot be done outside HCAs because all or most of the presently occurring owls and all or most of the superior habitat are inside the HCAs is incorrect. Even though we emphasized it in our strategy, it is not widely recognized that the strategy allows for the cutting of timber on nearly one-half of the remaining suitable owl habitat. As that habitat is cut, it will provide a perfect opportunity to test the effects of "new forestry" on spotted owls. Our intent is to maintain the HCAs in the best possible condition for spotted owls. That means allowing cutover areas to regenerate, and ceasing logging of suitable habitat areas. In the long term, if we find that "new forestry" techniques will provide habitat of equal quality for spotted owls, then implementation of such techniques within HCAs should be evaluated anew. Please see the answer to question number 18.

11. QUESTION. "Should criteria other than spotted owls and jobs be considered in evaluating the costs and benefits of your plan?"

ANSWER. The ISC report states that others aspects of forest management should be evaluated, including effects on water quality and quantity, scenic values, soils, fisheries, other wildlife, biodiversity, and recreation. Otherwise, the consequences of the proposed strategy have been limited by administrative decision and political realities to only two matters of potential concern--owls and timber supply (i.e. jobs). The issue and the ramifications of the strategy we propose are far broader than that. To consider the strategy in such a narrow framework is to trivialize the issue at hand.

Questions by Senators James McClure and Malcom Wallop

12. QUESTION. "Your report is described as 'credible.' What exactly makes it credible?"

ANSWER. The scientific credibility of the conservation strategy we have presented results from use of the scientific method in its development. The key features of the plan (including the geographic distribution, number, size, configuration, and connectivity of HCAs) were all tested with the best available quantitative data and other information, including modeling. When these data suggested conservation responses other than those in the tested strategy, the plan was adjusted accordingly. After a number of such tests and concomitant adjustments, the resultant plan conforms with our current understanding of all aspects of the biology of the northern spotted owl.

Credibility also results from the evaluation of the credentials, experience, reputation, and "credibility" of those who prepare any report. The team members were selected with these criteria in mind and information on each team member ~~is~~ detailed in the ISC report and can be readily evaluated. The operational process is also important including the make-up of the team as to organization by whom they are employed. Each involved federal agency was represented (Forest Service, National Park Service, Fish and Wildlife Service, and the Bureau of Land Management). Each state wildlife agency (California, Oregon, Washington) was represented. Academia, industry, and environmental organizations were represented. All representatives had experience and credentials appropriate to the task. Thirteen of sixteen team members had long-term experience with research and/or management of spotted owls.

The process was "open" in that any and all sessions (including field trips) were open to attendance by any who cared to do so for the first 4 months of the 6 month process. During the last 2 months, the 17-person team worked in relative seclusion to prepare the final report.

All (we believe) pertinent published literature and reports concerning spotted owls were examined, and information considered germane was synthesized and used in our deliberations. All ongoing research known to us was reviewed. Field biologists involved in monitoring or management were consulted. Federal land managers were interviewed in their offices and in the field. We consulted with leading experts in silviculture, ecology, wildlife biology and conservation biology. The report was subject to peer review by reviewers selected, at our request, by presidents of five learned professional societies (The Wildlife Society, Society of American Foresters, Society for Conservation Biology, The American Ornithologist's Union, and The Ecological Society). The final report carefully documents all aspects of the process. "Scientific credibility" is accorded by the scientific community. Peer review and subsequent supporting letters from learned societies indicates that such was achieved.

13. QUESTION. "I am told that the Forest Service has empirical data from the spotted owl monitoring inventories, conducted over the last two years, indicating that the Spotted Owl Habitat Areas (SOHA) network currently in place may be working as predicted, with only moderate long-term risk to the owl. Why did you summarily discount this management scenario?"

ANSWER. The Forest Service SOHA monitoring program has provided estimates of the proportion of SOHA sites occupied by pairs of owls in 1988 and 1989. The proportion of SOHAs occupied in each year has been relatively high. This is not surprising since the SOHAs were established, whenever possible, around known pairs of owls and many, perhaps most, have not yet been disturbed by logging. Further, additional stands of suitable habitat adjacent to the SOHAs contribute to the value of the SOHA to owls. Until these adjacent stands are cut, it is difficult to determine if the SOHA will indeed provide for a pair. As many SOHAs contain less suitable habitat than is found within the average home ranges of pairs that have been studied, this is open to serious question. From two years of pair occupancy data, it is impossible to assess whether the SOHA system is working (or not working) to provide for the owl's long-term viability. To assess the likelihood that the SOHA network would provide for the long-term viability of the spotted owl, it was necessary to model the dynamics of single-pair and small clusters of SOHAs. These models, and the insights they provided, are discussed in Appendix M of the ISC report.

In general, model results suggest that single-pair and small cluster SOHAs have a very low likelihood of providing for the long-term persistence of the spotted owl. This "poor" likelihood was identified in the Forest Service's FEIS that described the current strategy.

An additional limitation of the SOHA monitoring program, revealed by model simulations, is that pair occupancy rate is not a sensitive indicator of the general trend of spotted owl populations over the short-term (the next 10-30 years). The continued loss of suitable habitat outside of the SOHA network displaces a large number of adult owls. Those owls that survive the loss of habitat crowd into the remaining suitable habitat (i.e., the SOHAs) resulting in high occupancy rates. During periods of habitat loss, high occupancy rates (high densities in smaller areas) arise even though the overall population is declining. This occurs as a result of "packing." Please see answer to question number 60 and the next question (number 14).

The Record of Decision signed by the Chief of the Forest Service that established the current strategy assumed that options for managing the owl's habitat would not decline substantially over the next 5-10 years. We believe differently based on our analysis of the situation. And, the FSEIS on which the current strategy is based gave the chances of success over 100 years as "poor."

14. QUESTION. "Is the protection offered under the Conservation Strategy sufficiently better to warrant the overwhelming increased socio-economic impact?"

ANSWER. We simply do not believe, after consideration of all available information, that the current strategy will succeed in maintaining viable populations over the long term (100 years or more). The FS analysis of the current strategy in the Supplemental Environmental Impact Statement (SEIS) accords it a "poor" chance of success over a 100-year period and only a "moderate" chance of success over a 50-year period. The definition of "moderate" in the Forest Service's FEIS document was precise and quantitative; and it does not impart much hope for long-term persistence of the subspecies. We find it surprising that anyone is shocked that we concur within the FEIS in this regard. We believe those to be optimistic assessments. So, the question is more appropriately stated as "Is the cost of retaining the northern spotted owls in viable numbers well-distributed within its range socially and politically acceptable?" That question is more appropriately answered by appointed and elected officials and, ultimately, by the American people.

Whether the increased costs are "overwhelming" is a matter of political judgment and is not a biological consideration. We do believe, however, that such costs are inherent in any strategy.

Proceeding along present lines of management is likely, in our collective opinion, to fail in terms of sustaining viable populations of owls. In turn, this does not seem to us to be in keeping with the National Forest Management Act (NFMA) and/or Endangered Species Act (ESA) and regulations issued pursuant to those acts. Of course, such is merely the opinion of our group of scientists. We are not experts in matters of law.

Estimates of the economic and social impacts of applying the ISC strategy have become quite confused--particularly as reported in the press and as expounded by various players in the controversy. For example, a recent study by Oregon State University economists was reported in the press to say that the strategy we propose was apt to cause the loss of 50,000 jobs in Oregon. In reading the report, it became obvious that the cost of implementing the ISC strategy was estimated to be about 6,000 or so jobs. Another 6,000 or so jobs were estimated to be lost as a consequence of application of the preferred alternatives in National Forest Plans. The other 38,000 jobs to be lost were predicated on the assumption that the ISC strategy would be applied to private lands. There was no such recommendation for application to private lands in the ISC report. The loss of 6,000 jobs is not a trivial matter--but it is not 50,000 jobs either. We recommend careful perusal of any such economic analyses to discern precisely what they do and do not say. The ISC report did not impose requirements for private lands--not within HCAs nor between HCAs nor anywhere else. It may be legitimate for analysts to extend consideration beyond the recommendations in the ISC report--but it should be made very clear that they are doing just that. Projections of economic and social effects are, like the ISC strategy, hypotheses. Results differ dramatically depending on assumptions inherent in the analyses. These assumptions should be carefully examined in considering such reports. There are, so far, estimates of lost jobs that run from several thousand to well over 100,000.

15. QUESTION. "Spotted owls are certainly not sensitive to human disturbance. Why has the ISC chosen to prohibit road building in HCAs? Can you point us toward any data in the report that substantiates this recommendation?"

ANSWER. The report did not prohibit road construction in HCAs. We suggested roads be placed in HCAs only when no feasible alternative was possible. Road construction diminishes the quality of habitat by the creation of edge and the amount of habitat by the loss of forested land displaced by the road. Our reasons for these recommendations had very little to do with owls' reactions to humans.

Owls are generally tolerant of human presence. However, limits of this tolerance are not known. Putting owls in any more frequent contact with humans than necessary increases probabilities that some of those humans may intend harm to the owls. Given the tension surrounding the issue there may be increased probabilities of harm coming to owls from increased human contact. But, again, the primary rationale for discouraging roads in HCAs was habitat related.

16. QUESTION. "It is my understanding that the data for juvenile dispersal estimates were based on radio telemetry studies, and that significant mortality has been documented with placement of radio transmitters on juvenile spotted owls. Even with these impediments, in the report you note that existing research shows that the average distance for dispersal of owls in the field was 18 to 19 miles. How can you then use this data to support the assignment of a much smaller 12-mile maximum distance between the large HCAs, and even shorter distances between smaller HCAs?"

ANSWER. Mortality has been documented among juvenile owls equipped with radio transmitters, but whether such mortality is different from that of juveniles without radios has not been proven. Even assuming, however, that radio-tagged juveniles have a higher mortality rate than unradioed birds, our analysis of available data from 56 radio-tagged juveniles failed to show any trend in dispersal distance in relation to how long a given juvenile carried a radio transmitter (see Appendix P, p 306 of the ISC report). Instead, it appears from the data that dispersing juveniles quickly moved about as far away from their natal area as they were ever likely to. An earlier-than-normal death, therefore, seems unlikely to measurably bias our estimate of mean dispersal distance. In our opinion, these are the best data available, and we were comfortable using them for this purpose.

The only alternative data on dispersal distance came from banded birds (aluminum bands on legs). Probably all experts would agree that aluminum leg bands are much less likely to affect a bird's behavior and survival than a heavier, bulkier, harness-mounted, back-pack radio transmitter. The median "final dispersal distance" of radio-tagged birds was 16.4 miles, while the comparable value for banded birds was 8.4 miles. Because data from banded birds were constrained by search area (which would tend to produce lower than true estimates of mean and median dispersal distances), we judged the data from radio-tagged birds likely to be more accurate (see Appendix P, p 307 of the ISC report).

If we erred in judgment on how far apart to place HCAs, it is more likely that the dispersal distances were overestimated considering the results from the banding data. Therefore, a much better argument can be made that the distance between HCAs should be decreased than the opposite argument that the distances should be increased.

Regarding how we then selected recommendations for 12-mile separation between large HCAs and less than that for smaller ones, see our answers to question 32.

17. QUESTION. "The Conservation Strategy recognizes the development of spotted owl habitat in certain young, intensively managed stands. Research results to this point from northern California are cited. The report also recognizes the likelihood that forest management may provide both owl habitat and timber products, and suggests that such prescriptions be tried on private land. Why then is it completely disregarded and categorically prohibited on federal lands?"

ANSWER. We did not disregard forest management to produce or sustain owl habitat nor did we categorically prohibit management to create spotted owl habitat on federal lands. Quite to the contrary, we encouraged such management. However, we stated that we viewed development of silvicultural prescriptions for spotted owl habitat as largely experimental, and proposed that those prescriptions should be tested outside the HCAs before they were applied within the HCAs. Saying that some wildlife biologists and some silviculturists believe that a silvicultural prescription can be developed that they think will work to produce owls and timber and relying on that faith in a management strategy stretches the bounds of "scientific credibility." When such is applied to a recovery plan for a threatened species it could, and will be, asked if it complies with the ESA.

18. QUESTION. "How successful can the experiments be to demonstrate compatible forest management and spotted owl habitat maintenance when you are allowing the experimentation on only marginal owl habitat?"

ANSWER. The implication that all of the superior spotted owl habitat is contained within the proposed HCAs is incorrect. Large amounts of high-quality habitat exist (perhaps as much as 50 percent of that which exists) in the forest matrix between the HCAs. The plan, then, allows for the cutting of extensive areas of high-quality habitat. We anticipate that large numbers of spotted owls will be eliminated from the population over time as the areas between the HCAs are cut. There is no reason to believe that the results of experiments conducted outside of HCAs will be any different from experiments conducted within HCAs. Please see the answer to question 10.

19. QUESTION. "What is the basis for the numbers in the '50-11-40' rule for forests outside the HCAs? Is it not possible that if 30% of the areas between HCAs were in favorable owl habitat, it may be no less effective in providing connectivity between the HCAs?"

ANSWER. The "50-11-40 rule" (50% of forested sites with trees averaging 11 inches d.b.h. with 40% canopy closure) was adopted because it provided a forest condition on the landscape in space and time that provides suitable habitat for owls to move through in relative safety from predators with some chance to obtain food--particularly during juvenile dispersal. Stands under 40 years of age are characteristically more dense and less inhabitable by species such as the owl. Assuming a standard rotation of 80 years under fully regulated conditions, it is reasonable to expect to have 50% of the forestland over 40 years of age at all times. The 40% canopy closure was a minimum cover level chosen that is easily attained and retained after thinning in stands in this age class throughout the range of the owl. As to the percentage necessary, the monitoring program will provide insight into whether it should be less than or greater than the recommended 50%. We believe that shorter rotation ages will produce less suitable habitat for dispersal.

20. QUESTION. "Regional Forester John Butruille, in his written comments to the Fish and Wildlife Service's spotted owl listing team, last December stated that the 'Forest Service believes that listing the spotted owl under the Endangered Species Act is not necessary for its long-term conservation.' He also stated, 'The northern subspecies of the spotted owl is viable and will remain so for the long term, well distributed throughout its geographic range in National Forests in the Pacific Northwest.' These comments were based upon agency implementation of the SOHA system. Did the Forest Service err in its comments, and is this not the case?"

ANSWER. In the Record of Decision implementing a SOHA strategy from the Forest Service's Final SEIS, the Chief of the Forest Service chose to accept a certain level of confidence of insured viability for spotted owl populations. The chosen alternative provided, at best, only a "moderate" chance of maintaining viable populations over a 50-year period and a "poor" chance for 100 years. The Regional Forester's comments were intended to assert that the Chief's decision would be carried out and that spotted owls would be provided for as stipulated in the management guidelines accompanying the decision. Mr.

Butruille's statement was based on information and analysis that he had available to him at that time. Information available now and that developed during our deliberations lead us to conclude that the current FS strategy for the northern spotted owl will not succeed over a 50-year period. Of course, the Fish and Wildlife Service has since evaluated the situation and declared the subspecies as "threatened throughout its range." Such is [a matter of judgment] based on evaluation of extant information. Times and circumstances change.

21. QUESTION. "In the methods section of your Conservation Strategy, you noted that 'hands on' management of habitat and animals would be considered. However, the management strategy does not address any of the proactive management activities, such as translocation of owls and development and use of artificial nest structures usually associated with a species which is threatened with extinction. Was this a section that was accidentally left out of the discussions, or did you have a specific reason for not including it in any of the management recommendations?"

ANSWER. The ISC report does advocate (Appendices R and S) "hands on management" of habitat outside of HCAs which may demonstrate the ability to maintain owls in managed forests through innovative silvicultural practices.

The ISC saw no necessity to advocate translocations of owls at this point. Such may be necessary at a later date if demographic isolation in such areas as the Olympic Peninsula produces genetic problems. Data are inadequate to indicate that installation of either nest boxes or platforms would be either biologically or cost effective in maintaining a well-distributed, inter-breeding population. Captive rearing and artificialization of habitat are commonly used only as a desperation measure and run counter to the intent of providing viable habitat. The welfare of a species and its habitat are joint considerations. At the moment, numbers of birds are not the critical problem. Habitat loss is the problem. To justify continued habitat fragmentation and loss on the crutch of artificial breeding is not in keeping with either the ESA or NFMA.

Data available from demographic studies indicate that the survival rate for juveniles is .20 and .50 for sub-adults. If these survival rates were applied to "pen raised owls" (and that is almost certainly optimistic) only 10 of every 100 released would survive to breeding age. And, whether these would enter the breeding population is unknown. For any real chance of success, it would probably be necessary to "hack" (i.e., raise the birds in the place they will occupy) the birds. Spotted owls are fed by the parents from spring until fall. Such would be expensive and, if successful, would have to continue over a period of centuries. Extensive surveys would also have to be conducted yearly to discern vacant territories--a highly expensive, involved process. "Quick fixes" and "simple solutions" are, more often than not, not the panacea they may seem.

22. QUESTION. "Your report notes that the chance of establishing viable spotted owl populations in portions of the range is very low. Do you agree that it would be feasible to develop a plan to avoid the extinction of the northern spotted owl without maintaining a viable population of northern

spotted owls on the Olympic Peninsula in Washington? Do you agree that it would be feasible to develop a plan to avoid the extinction of the northern spotted owl without maintaining a viable population of spotted owls in the Oregon Coast Range?"

ANSWER. We accepted our charge with the understanding that we were to develop a scientifically credible conservation strategy for the northern spotted owl consistent with the requirements and specifications of the ESA and the NFMA. Our understanding of these pieces of legislation led us to devise a strategy which would maintain a viable, well-distributed population. We are not willing to depart from this position that is clearly inherent, at least to us, in existing law and regulations. We believe that we were and are mandated to obey the law unless and until there are changes in the laws. Further, reduction in the numbers or the geographic distribution of a species increases the risk to that species. As we are already accepting the likelihood of a reduction in numbers of, perhaps, 50 percent from present population levels (which are already much less than populations of 100 years ago) we do not think it wise to simultaneously amputate portions of the range. If such is seriously contemplated, we strongly recommend increases in the sizes and numbers of HCAs and reduction in the distance between HCAs in those areas where owls will be accommodated to compensate to some degree (though by no means fully) for loss of range and genetic variability.

23. QUESTION. "On February 6, 1990, Committee member Dr. Jared Verner wrote a professor in Finland asking for information about birds on islands in the Baltic Sea which the professor had studied. Dr. Verner wrote: "Our thoughts

are converging on about 20 pairs [for HCAs], but we lack good empirical evidence from birds to help us make that decision, or to defend it in a court of law." Do you agree with Dr. Verner that as of February 6, 1990, your committee lacked good empirical evidence to support your decision on the size of HCAs? Would you please explain why your committee first decided how large the HCAs should be, and then began looking for empirical evidence to support your decision? Would you also explain why your committee felt you had to collect information to defend your plan in a court of law?"

ANSWER. This question has three parts, which are answered in order. By February 6, 1990, we were still seeking all the evidence we could find to test our hypothesis that 20 or more pair HCAs would provide for relatively long-lasting subpopulations of spotted owls.

We didn't decide how large the HCAs should be and then seek empirical support for that decision. The committee considered many alternative HCA sizes and tested them with empirical and theoretical (modeling) data. It was soon clear that aggregations of multiple number pairs of spotted owls would be sustained over much longer periods than single pairs of birds. We reached a tentative conclusion to recommend larger blocks containing multiple numbers of pairs of some size well before February 6th. Our initial efforts to map such blocks of habitat first led us to conclude that a size large enough for about 20 pairs of spotted owls was feasible in terms of how habitat existed on the ground. It proved difficult to locate reasonably compact tracts of suitable habitat with more than 20 pairs due to previous loss of habitat to fire, and particularly, logging. At that point, we began to seek empirical and modeling data to test the hypothesis that 20-pair HCAs were sufficiently large to assure relatively long-term persistence of these subpopulations. Specifically, we sought to disprove the hypothesis that 20-pair HCAs would be too small for subpopulations to persist for several decades with low-to-moderate rates of immigration and emigration. Both types of data supported a conclusion that subpopulations of 15 or more pairs tend to survive for such reasonably long periods of time, if they are supplemented with some amount of exchange of individuals between subpopulations. However, based on monitoring results to date, we know that all periodically occupied territories are unlikely to be occupied by breeding pairs at any given time. Consequently, we concluded that HCAs should be large enough to provide for 20 or more potential pairs, which we anticipated will give reasonable assurance of at least 15 actual pairs occurring per HCA at any given time.

The personal letter from Dr. Verner from a colleague expressed only his personal opinion, of course. It cannot and should not be construed as some consensus of the entire committee. The matter of a conservation strategy for the spotted owl is obviously a contentious issue that has already engendered several legal actions. It is probably not unreasonable to expect HCA size to become a matter of some similar attention, should our recommended strategy be implemented in whole or in part. In fact, if newspaper accounts are to be believed, both industry and environmental advocates have assured the public that court actions are imminent. Therefore, Dr. Verner's assumption concerning "defense in a court of law" seems quite reasonable to us.

24. QUESTION. "Dr. Verner wrote in the same letter that 'our group has the force of Federal Law behind it, as a Congressional bill passed last fall

requires agencies to implement our plan or explain in writing to Congress why they decided against it.' Would you please explain the inconsistency between this statement and the statement in your report that your committee merely proposed a plan and that it was up to others to decide whether to adopt the plan?"

ANSWER. The personal letter from Dr. Verner to a colleague expressed his own views and did not express the consensus opinion of the ISC. We see no germane or operative point in this question. Dr. Verner's letter neither states nor implies that our committee had or has any authority to implement our recommendations. It merely points out that a decision about implementation may involve both the agencies and Congress. Further, the ISC, as a whole, did not believe that our recommendations had the "force... of law" behind them and did not operate on that assumption during our deliberations. The point raised by the question has nothing to do with the procedures followed, the conclusions reached, or the recommendations of the ISC.

25. QUESTION. "Your committee used something called the 'Delphi Approach' to decide how far apart the HCAs should be. The Delphi Approach is a process of using professional judgement to make a decision where there is not scientific data to make the decision. Do you agree that any time the Delphi Approach is used, there is considerable room for different people to reach different conclusions about the correct decision?"

ANSWER. The Delphi approach cannot function in the absence of data, as you have intimated. Rather, the Delphi Approach is used in the context of dealing with incomplete information. The more information available the more constrained the conclusion(s) that can be drawn from the information. In the case of the spacing between HCAs, we had extensive but incomplete, information on the dispersal capabilities of spotted owls. Consensus among the ISC on the spacing among HCAs as supported by the dispersal data was not immediate. Consensus among the ISC resulted from an iterative process wherein each member of the team presented their assessment and had the opportunity to reassess their position in light of arguments presented by other team members. Given the amount of available dispersal data and the task of developing a conservation strategy for the long-term persistence of the spotted owl, we do not believe that different groups of scientists would reach very different conclusions regarding this aspect of our strategy. And, in our opinion, a differing consensus would more likely favor HCAs being placed closer together rather than further apart. Also, please see answers to questions 84 and 118.

26. QUESTION. "Can you offer an opinion as to whether adoption of your proposed conservation strategy constitutes multiple use of National Forest lands in the Pacific Northwest?"

ANSWER. We believe that preserving species that occur on National Forests became, by definition, an accepted "multiple-use" with the passage of NFMA (and development of attendant regulations) and the ESA. Besides, it seems likely that the finding of the Fish and Wildlife Service that the subspecies is "threatened" makes the issue whether preserving species listed as threatened is an appropriate multiple use of only academic interest.

27. QUESTION. "Does the Strategy represent maintaining a minimum viable population? If not, what is gained by this planned increased level of protection over what is needed for viability?"

ANSWER. What is needed for viability is a social as well as a scientific question. The scientific part of the question has an easy answer: what is needed to be as sure as possible of future viability of the species is to provide as much habitat as possible, as widely distributed and for as long as possible. A rule of thumb in conservation biology is that viability is best (scientifically) defined as a 95 percent or greater probability that the species will endure for at least a century. The ISC plan barely provides for this. The social (economic and political) effects of a "save it all" strategy led the ISC to consider a conservation strategy that required less than the ideal solution of "save it all and grow lots back." The term has fallen into disuse in the Forest Service as it became obvious that once a "minimum" was defined it quickly became the "maximum" that would be accounted for in management. Operating at minimum levels almost insures failure over the very long term. Please see the answer to questions 2 and 3.

28. QUESTION. "Why do you consider it acceptable to use information from various areas (Hawaii, Great Britain, Arizona, New Mexico) when developing criteria for the size and spacing of the HCAs, and yet you do not consider it acceptable to use information from Northern California when developing size and quality criteria for habitat suitability, especially in areas outside of California?"

ANSWER. First, we need to interpret and clarify the question. We did not use information from other areas to reach decisions about the spacing of HCAs; those decisions were based on known dispersal distances of 56 juvenile northern spotted owls.

Second, we assume that the information you refer to from northern California is that showing that spotted owls are breeding in relatively young, second-growth forests in the coastal redwood belt of northwestern California. Our answer is based on this assumption.

Some aspects of animal biology tend to be more consistent from species to species than other aspects. This is part of the reason why medical researchers have been able to use a variety of nonhuman animals in studies that later have significant applications in human health. Of course, the best "test" comes when the actual target population becomes involved. When seeking to determine a number of pairs of spotted owls that could interact in a subpopulation with a reasonable expectation of being intact in, say, 75 to 100 years, we could not use information based on studies of spotted owls. That information didn't exist. But the components of population ecology that would determine what that number of pairs might be are more similar in other bird species than, say, in lizards or small mammals. Consequently, we sought information that would likely be most comparable to spotted owls--information from other bird species. When possible, we sought information from relatively large-bodied, nonmigratory birds (see explanation in Appendix O, pp 288 & 289, of the ISC report). These are all species with similar traits that would be important in determining some relatively stable population size. For example, all are capable of flight; all have annual reproductive cycles and potential reproductive rates that are similar; all tend to disperse from natal areas to seek mates elsewhere; all communicate vocally (such is important in locating mates, and even in locating general areas in which to seek mates); and, probably, all have floaters as part of their population when populations or subpopulations are at or about carrying capacity of the habitat. The general levels of similarity among species that we considered in these attributes lead us to believe that a subpopulation on the order of 15-20 pairs would tend to be approximately as stable for all relatively large-bodied, nonmigratory bird species. Consequently, inferences from one species meeting those criteria are likely to be generally the case for other such species, regardless of where they are from or what general habitat type to which they are adapted.

On the other hand, plant communities tend to be very different in many of their response patterns. Redwoods in coastal California attain conditions in 60 to 80 years that resemble, structurally, stands in the Oregon Cascades or in coastal Washington that we know require at least 150 years to develop. It is not generally the case that Douglas-fir trees can attain diameters at breast height of 30 inches or more in 60 years. Growing conditions differ, and tree species differ. North-coastal California is blessed with high rainfall, generally long growing seasons, coastal fog, and good soil. And redwood trees tend naturally to grow relatively fast, and they also stump sprout (i.e., new trees grow from stumps of cut trees making use of the existing extensive root system that is already in place), enabling them to regenerate faster than Douglas-fir into stands of large trees. Information from Oregon and Washington is already available to show that forests there cannot attain conditions suitable for breeding spotted owls as quickly as can redwood forests in coastal California.

We gave full consideration to the rudimentary data from Northern California that was available during our deliberations. Such is clearly evident from reading the ISC report. Please refer to the answer to question number 103.

29. QUESTION. "Why does the Report state that current Forest Service definitions of suitable owl habitat in California are 'open to question' and 'not adequate'?"

ANSWER. Recent studies in California have shown that spotted owls are breeding there in a wider variety of habitats than accounted for in Forest Service standards and guidelines which were drafted before the more recent information became available. The Forest Service in California is currently addressing this matter.

30. QUESTION. "Since current definitions of habitat for owls are not fully applicable in California and there are many instances of spotted owls using managed forests habitats, why have you chosen only the single strategy of preservation across the entire range of the owl? What do we gain in terms of viability in choosing only preservation over some forms of low intensity management?"

ANSWER. Although there are examples of spotted owls occupying managed forests in all areas of the subspecies range, our examination of the data leads us to believe that the best habitat for spotted owls in all parts of the range of the subspecies is old forests. The single exception may be the redwood zone, where owl densities are quite high in 50- to 80-year-old stands that make up some 7% of the owl's range; but the structure of such stands is much more diverse, and thus more suitable for spotted owls than in comparably aged, managed stands of other conifer species we visited in the field. Most other areas where we have seen owls in relatively young stands include mixtures of young forest with inclusions of older forest. Such areas typically have significantly lower densities of spotted owls than in undisturbed old forest. If we are going to greatly reduce the habitat of a species (as our plan proposes), then we should try to maintain the remaining habitat in the best condition possible. To reduce the population 50% while at the same time providing the survivors with only marginal habitat would be extremely risky and, certainly not in our minds "scientifically credible." Therefore, we opted to provide the survivors with what we believe is good quality habitat of appropriate size, appropriately spaced, and appropriately connected.

It may be possible to develop silvicultural regimes that will produce suitable owl habitat of high quality. The ISC report recognizes that and suggests research to test that hypothesis. But, the proof does not presently exist and it is simply not "scientifically credible" to bet the future of a threatened species on such a hypothesis.

31. QUESTION. "Why do the managed private forest lands in California support approximately one-half of all spotted owls in northern California, while private lands in Oregon and Washington support less than 10% of the owl populations in those states? Based on your answer, then, why can't you manage them the same way?

ANSWER. Spotted owls on private lands in northern California occur in two very different types of forest: coastal redwood and interior mixed conifer. The coastal redwood forests are a unique type not found elsewhere in the remaining 93% of the range of the owl. The mixed conifer stands in the interior of California on private lands are generally at lower elevations than the holdings of the Forest Service. Private foresters have described their management scenario to us as follows: Selective harvest of a portion (25-40%) of the dominant overstory with retention of hardwoods, snags, and wood on the forest floor leads to retention of many old-growth forest characteristics that apparently allow owls to occupy many such stands.

Repeated entries into these stands to remove trees over a number of decades lead to a change in trees species composition and to an eventual conversion cut (clearcut) to allow reestablishment of the desired tree species composition (pine and Douglas-fir dominance). At the point of clearcut harvest, the stands will cease to be acceptable spotted owl habitat for approximately 60-80 years. The choice of selective harvest for a portion of the rotation is a product of site quality, forest type, economic climate, and management philosophy and goals of the owners. Public forest lands in northern California are routinely managed under a clearcut regimen and rotation length that preclude occupancy by owls for 60-80 years following initial harvest. On the more mesic forest lands of Oregon and Washington, both private and public, Douglas-fir is the dominant tree species and is harvested by clearcut logging followed by replanting of Douglas-fir. A 50-100 year rotation is practiced. In this scenario, like that on public lands in northern California, characteristics of suitable spotted owl habitat do not have time to develop and, if and when they do, they are not sustained for long before they are terminated by cutting of the trees. It may be possible through the practice of innovative silviculture and adaptive management (Appendices R and S) to provide features and characteristics of old-growth forests within managed forest stands and accommodate spotted owls. We advocate experimenting with such schemes in the forest matrix between HCAs to demonstrate the capacity of managed stands to support owls. If and when data exists to demonstrate capability of providing appropriate habitat to support adequate numbers of owls, the question of opening HCAs to such management should be considered new.

The situation in Northern California is ecologically unique. Circumstances of forest type, past fores management, land ownership, are such that we stated that we believe the involved parties can cooperate to develop a strategy that will provide 250 pairs of owls from private lands on a continuing basis. The strategies developed may prove applicable to management of other habitats. But, that remains to be seen. Also, please see the answers to questions 77 and 109.

32. QUESTION. "Given the inherent stability of HCAs containing 15 or more pairs, what is the rationale for spacing HCAs such that two-thirds of the juveniles produced will be able to successfully disperse between HCAs? Why not

one-third or one-half, as opposed to two-thirds? What is gained or lost by changing the distance between HCAs to meet these different percentages?

ANSWER. First, it's misleading to conclude that HCAs with 15 or more owl pairs are "inherently stable." As we point out in our report, such HCAs would tend to contain owls for a much longer period than, say, HCAs of only 5 or 10 pairs. But, we believe that both the empirical and the modeling data show conclusively that even units of 15 pairs would ultimately decline to extinction without periodic immigration of owls from other areas. The HCAs are mutually dependent upon one another, as connect units in what is called a metapopulation, to maintain numbers of owls in all units. When conditions are good for breeding in one HCA, they may be poor in another, so a drop in numbers in the poor site could be compensated by immigration from the good one. In another year, conditions on these sites may be reversed, so the net exchange of birds would go in the other direction. We believe that dynamics such as these are essential to long-term viability of the spotted owls. They would be absent without many HCAs located close enough to each other to facilitate movement of owls among them.

Second, even if time verifies our hypothesis that 15-pair HCAs would be enough in a well-distributed metapopulation of such units to provide for long-term viability of the owls, provision of sufficient habitat for only 15 pairs in each HCA will not give the result intended. Because birds die or leave their territories from time to time, at any given point in time an HCA large enough for only 15 pairs would be expected to have fewer than that number of full pairs that are compatible and capable of breeding. For this reason, HCAs need to provide for more than 15 pairs. Information available to us indicated that 20 or more pair HCAs would be sufficient to provide the "cushion" needed.

Third, and to answer your main question, guidelines for spacing were based on observed dispersal distances of 56 radio-tagged juveniles (see Table P1, p 305 of our report) and all other information yet available on the dispersal behavior of juvenile spotted owls. Success of our proposed strategy depends on frequent dispersal of juveniles between HCAs, which means that they must be separated by distances well within the known dispersal ranges of juveniles. We were unable to determine a fully objective method to set a "safe" distance between HCAs, based on owl dispersal distances. That the distance needn't include the observed dispersal distance of all juveniles studied seemed obvious to us. But we also believe the distance must be well within the known dispersal distances of at least half of all juveniles. Based on lengthy discussions of this matter among all members of our Committee and advisors, we concluded that the dispersal distance between large HCAs (20+ pairs) should be within the observed dispersal distance of at least two-thirds of all radio-tagged juveniles. This recommendation was included in our draft report, which was reviewed by five technical experts selected by professional societies. They were fully aware of the fact that this decision was based on a Delphi approach (best collective judgment of experts in the field following a prescribed procedure). Only one reviewer, Dr. John Wiens, questioned this decision. In follow-up conversations with Dr. Wiens, he responded that he could suggest no better method for arriving at a decision on this matter and, furthermore, that he was satisfied with the "two-thirds" guideline that we adopted.

Also, you should not assume that because the HCAs are spaced within the dispersal distance of 66% of marked birds means that 66% will indeed find another HCA and be able to find a territory there. Some 66% are assumed to have a chance to reach another HCA. Those that do succeed in doing so is likely well less than 66%. Of those that do reach another HCA, only a fraction will find a vacant territory.

What would be gained or lost by changing the distances between HCAs to something more or less than our two-thirds guideline could not be fully assessed until some different rule were adopted. Understand, of course, that uncertainty exists with our guideline too. We have generated a hypothesis that needs to be tested by monitoring. But lowering the standard to, say, one third (distance enough to include known dispersal distance of one third of observed juveniles) would have three effects. First, many fewer HCAs would be provided because they would then be further apart, so much less total habitat would be provided to assure long-term viability of spotted owls. Second, the lower number of HCAs would reduce the total number of owl pairs provided for in HCAs. Third, it would significantly reduce the effectiveness of dispersal by owls between HCAs, making individual units of 15 to 20 pairs less stable because of a reduced rate if immigration of birds from other areas. Such a change in the guidelines would reduce the likelihood of long-term viability of the northern spotted owl an unknown but significant amount. ISC considered such an option to produce an unacceptable risk for the owl. Accepting, say, a reduction of present owl numbers by, say 75%, compared to the currently proposed 50% is apt to be both lacking in scientific credibility and legal acceptability.

Increasing the guideline to include the known dispersal distance of, say, three fourths of all observed juveniles would have the opposite effects on all of the above items. It would increase: the total amount of habitat in HCAs for owls; the total number of owls in HCAs; the effectiveness of dispersal by owls among HCAs; and the likelihood of long-term viability of the northern spotted owl an unknown amount.

Our two-thirds guideline obviously struck a balance between opposing extremes, a balance that ISC believed would produce a high likelihood of long-term viability of the owl. Furthermore, if this same question were addressed by other teams of scientists with our collective level of knowledge about general animal ecology, wildlife biology, the vital role of dispersal in population dynamics, and, most importantly, spotted owl biology and population dynamics, we believe they would settle on a guideline very near that proposed in our strategy. If there were differences in that expert opinion, we believe that they would be most likely in the direction of giving more consideration to the banding data. In either case, this would result in reducing the distance between HCAs. Please see the answer to question number 16.

33. QUESTION. "Fire has been a constant factor in the forest in California and parts of Oregon and Washington. How has the last 100 years of fire suppression affected spotted owl habitat as we see it now? How did the eruption of Mount St. Helens affect spotted owl habitat?

ANSWER. This is a difficult question to answer because it has many facets. On the one hand, fire suppression may have improved some habitat by allowing stands to develop a multi-layered overstory. On the other hand, fire suppression may have allowed the accumulation of large amounts of woody debris in many stands, which then abetted a very hot burn, wiping out the entire stand. Also, fire suppression may have reduced the extent of habitat loss from fire, but this may be balanced with the increased incidence of human-caused fires as a result of increased presence of people such as recreationists. Under fully natural conditions, fire was an unquestionably important factor in maintaining the multi-layered structure of the forest that is preferred by spotted owls. This forest structure may be difficult to recreate with management, as management goals typically have just the opposite effect of fire. Where fires tend to kill the small understory trees and leave the large overstory trees unharmed, management usually is aimed at removing the large overstory trees and releasing younger trees.

The eruption of Mount St. Helens leveled a large area of some 60,000 acres of good spotted owl habitat that harbored pairs of owls. It will be many years (80-150) before most of the area is again suitable for spotted owls.

Catastrophic events such as occasional large fires, volcanic eruptions, wind storms, and other natural events can negatively influence owl viability over the long run. A better understanding of the frequency, extent, and probable location of such events and their short and long-term effects on owls and owl habitat would be useful in providing for long-term management.

34. QUESTION. "As one moves south in the range of the northern spotted owl, particularly in the Klamath Province, fragmentation of stands is a natural

phenomena produced by aspect, soil type and climate regime. How is this fragmentation different than 'man-caused' fragmentation, and why is it not detrimental to spotted owls?"

ANSWER. Natural fragmentation of forests is a fact of life and is probably equally as detrimental to spotted owls as man-caused fragmentation in some cases. A good example is the North Cascades National Park, where high elevation areas devoid of tree cover fragment the old forest habitat into narrow corridors along drainage bottoms. In most cases natural fragmentation is different from the patterns created by timber harvest. Man-caused fragmentation tends to be characterized by sharp edges between harvest blocks, distinct differences between cut and uncut areas, relatively even-aged stands of trees, a much finer "grain" or scale at which habitat is subdivided, and a network of relatively uniform-sized blocks or harvest units. By contrast natural fragmentation is generally characterized by indistinct boundaries between stands, uneven-aged stands, different aged stands from young to very old, and an irregular pattern of large and small patches of vegetation.

Thus, the kind of fragmentation caused by logging has been different from that caused by fire, windstorms and other natural phenomena. The fragmentation patterns produced by modern silviculture truncate succession at about 40-80 years. Thus, natural fragmentation probably has less of an impact on spotted owls than does fragmentation caused by logging and silvicultural treatment. However, this should be regarded as an informed hypothesis. We know of no research that has addressed this issue *per se*. In short, extensive fragmentation of suitable owl habitat is believed to diminish the overall habitat quality. This is probably true of all fragmentation--natural or man-induced. The difference is that one is under management control and the other is not.

35. QUESTION. "We have heard over and over that current forest management activities 'fragment' spotted owl habitat. What data exists showing that this 'fragmentation' negatively affects spotted owls?"

ANSWER. Data suggest a negative relationship between forest fragmentation and owl occupancy. At least two recent studies indicate that the owls select less fragmented areas for nesting. In addition, owls in heavily fragmented forests tend to have larger home ranges than owls in more uniform forests. This suggests that owls in more fragmented forests must cover more ground to obtain adequate food. This puts energetic and physiological stress on both foraging adults and nestlings. Ramifications of such "foraging theory" are that, in highly fragmented habitats, adults cannot be expected to be as successful in producing young as in less fragmented habitats. Common sense also indicates that spotted owls are apt to be more exposed to predators such as great horned owls and goshawks in more open or fragmented habitats. Increase in home range or movements impaired by fragmentation increase energy expenditure. It has also been suggested that fragmentation of forests has provided opportunity for barred owls, a close relative and potential competitor of spotted owls, to extend its range into spotted owl habitat. These relationships seem logical and likely but are yet unproven. It can be considered, in light of "common sense," that the burden of proof should be on the question of what proof exists to demonstrate that fragmentation does not diminish the quality of owl habitat. Fragmentation can be very quickly induced and only very slowly corrected.

36. QUESTION. "Your committee's charter required you to 'suggest possible options' for conservation of the northern spotted owl. You violated your charter by preparing a single plan which offers no options at all for protecting the owl. Why did you violate your charter and disregard the instructions your committee was given?"

ANSWER. We do not believe we violated our charter. We were given the following tasks to perform with the following results:

1) "Develop _a_ scientifically credible conservation strategy for the northern spotted owl."

We did develop, as clearly instructed, _a_ strategy. It was delivered on the due date.

2) We also received several short-term assignments to be achieved during _1989-1990_.

a) "Review the biological basis of the U.S. Fish and Wildlife Draft Criteria for the review of timber sales and the basis for conference opinions."

The ISC made such a review and verbally reported to the F&WS that criteria were appropriate for the circumstances existing at that time (circumstances have changed with the issuance of the ISC report and the listing of the subspecies as threatened).

b) "Assess whether current land management strategies of the agencies are reserving options that will allow for long-term strategies to conserve the northern spotted owl."

This was achieved and is included in Appendices C and D of the ISC report. We found that adequate options were not being preserved.

c) "Provide recommendations to preserve the necessary conservation options from the time the charter was issued and the conservation strategy completed."

We reviewed the provisions of Section 318 and agency guides and considered them adequate in the short term, which was defined as FY 1990 during which a conservation strategy would be developed. Further, we determined that the pressures on the FS and BLM to meet the 318 targets and enlarge SOHAs and stay out of "significant old growth" already instituted too many overriding constraints to allow consideration of options halfway through the fiscal year. Please note that the assignment was not to develop an array of options within a conservation strategy. The question implies, incorrectly, that such was the case.

3) We received several long-term assignments to be achieved in 1991 and beyond.

a) "Define habitat relationships for the long-term conservation of northern spotted owls."

This was achieved in 1990 and is included as Appendices F, G, and H of the ISC report.

b) "Suggest possible options to achieve the amount and configuration of habitat for long-term northern spotted owl conservation throughout the range."

The ISC did consider other options (see answer to question No. 68) but found each unsatisfactory in terms of probability of achieving the quality of long-term viability and/or increased impact on annual sale quality without commensurate improvement in long-term viability of the owl. Potential options to be pursued under the concept of adaptive management are described in Appendices R and S of the ISC report. Is there any real possibility that any strategy would have been seriously considered that had even greater costs in terms of suitable owl habitat reserved, at least temporarily, from cutting?

We considered the options analyzed by the Forest Service's Final Supplemental Environmental Statement (FSEIS) on spotted owl management. We did not consider any of these options as providing for long-term viability for the owl with the exception of Alternative L (save all old growth) and could not support or recommend any of these options as we did not believe they would be successful or, in the case of Alternative L, politically acceptable. Further, this task was to be addressed in 1991 and beyond which is logical enough given that we cannot evaluate options until clear signals exist as to what the situation is. We did our work, to the decision as to "threatened" status for the subspecies and the strategy to be adapted is still unclear. Only after a strategy is adapted can recommendation be made on how to preserve options. Preserving options cannot occur without preserving adequate amounts of habitat. There is no "free lunch" in this situation.

c) Evaluate current research efforts and recommend research, monitoring, and inventory programs to answer existing critical questions and to track the adequacy of management strategies and recommendations.

We did not address this issue as it is impossible to meaningfully consider these points until it becomes clear what conservation strategy will be selected for implementation.

All reports were submitted on time. The agency heads (FS, F&WS, BLM and NPS) who appointed our Committee and chartered its activities have made no indication that the ISC did not follow their instructions. On the contrary, ISC has been commended for the prompt and efficient achievement of our mission by those agency heads.

37. QUESTION. "One of the members of your committee, Dr. Eric Forsman, has for 15 years, based his entire professional career on aggressively advocating that spotted owls require old-growth forests to survive. What credibility can the public give your report in light of the fact you allowed Dr. Forsman to author the section or the report that concludes, just as he has been claiming, that spotted owls require old-growth forests to survive?"

ANSWER. Dr. Forsman has consistently maintained that spotted owls in Oregon and Washington "prefer" older forests. Dr. Forsman has never published anything that says spotted owls occur only in old growth. What he has done is to point out that spotted owl densities in Oregon and Washington tend to be relatively low in young, even-aged forests and relatively high in old-growth forests. These findings have been confirmed by other researchers. Dr. Forsman, and many other researchers, have also pointed out the consistency with which spotted owls in Oregon and Washington select older forests for foraging and roosting as evidence that such forests are the preferred habitat of the subspecies. We know of no data that refute these findings. To assert that Dr. Forsman is somehow biased in the matter intimated by the question, therefore, seems contrary to logic and is not in keeping with the high regard in which Dr. Forsman is held by his colleagues--including all the members of our team.

Dr. Forsman is one of the most knowledgeable scientists in the world when it comes to spotted owls and is so recognized by that part of the scientific community concerned with owls. Dr. Forsman's contributions to the ISC's work only add scientific credibility to the effort. Any scientific treatment of the spotted owl that does not include Dr. Forsman's work would be sadly lacking and fatally flawed. We know of no scientist knowledgeable in the field that questions his knowledge, dedication, ethics, or skill. His monograph on the northern spotted owl is the classic publication on the subspecies and was recognized by his peers with the Publication Award of The Wildlife Society--(the professional society for wildlife biologists).

The ISC operated through consensus as to which team member should address each chapter. Each chapter had several primary authors and the entire ISC reviewed each chapter. The entire report was then subject to peer review. We agreed, again through consensus, that we were all proud to sign the report. And as a result, the report in its entirety is a committee report--each and every part. The ISC, collectively, stands by all the chapters in the report and the integrity of each and every member of the team.

The ISC report does not state that spotted owls "require" old growth. In fact, the ISC report emphatically emphasizes that appropriate stand structure is the significant attribute--not age. At present, however, the vast majority of stands with that structure occur in mature and especially old-growth forests.

38. QUESTION. "Did you intend for the Forest Service to adopt your committee's plan without conducting any further environmental or economic analysis?"

ANSWER. We had no intention other than to submit a "scientifically credible conservation strategy" by the designated reporting date as we were charged. What the agency heads do with the report is up to them, and is, certainly, not under our control. Our report clearly anticipated that economic and social analysis would quickly occur. We even cautioned that the analysis would be limited to an issue of owls and timber supply (jobs), and that it should be expanded to cover other areas of concern.

39. QUESTION. "If the Forest Service finds that your plan would produce environmental or economic impacts, what flexibility have you given the Forest Service to modify your plan to reduce the impacts?"

ANSWER. The Forest Service (nor do any of the other land management agencies that chartered the ISC) requires no dispensation of flexibility from ISC. The conservation strategy we presented is advisory in nature. The agencies have the authority to deal with the strategy as they choose. However, how much credibility the strategy would have if it were extensively modified is quite another question. We clearly stated in our report (page 45) that:

> "We were asked to do a scientifically credible job of producing a conservation strategy for the northern spotted owl. We have done our best and are satisfied with our efforts. We have proposed. It is for others--agency administrators and elected officials and the people whom they serve--to dispose. That is the system prescribed in law. It seems to us a good one. We can live with that."

40. QUESTION. "Your plan appears to require the Forest Service to lock in place permanently all land set-asides in the current group of final, in some cases draft, forest plans. Did your committee really intend to immobilize the

entire forest planning process on these forests for the protection of the northern spotted owl, and to prohibit the Forest Service from changing any of the current final or draft plans?"

ANSWER. The ISC strategy does not require anything of the Forest Service. Please see the answer to question number 29. We analyzed the condition of habitat between HCAs that would exist under the preferred alternatives of new forest plans and determined that such conditions would be adequate to support dispersal of owls between HCAs with the addition of the 50-11-40 rule. If such land allocations were maintained, there would be no need for dedicated corridors of habitat between HCAs. Such was an attempt to hold impacts on annual timber sale quantity down. It was not our intent to "immobilize" Forest Service planning. But, if there are changes in the plans that diminish the quality of habitat between HCAs for dispersal of owls, it is imperative that the question be reopened and some means to provide habitat for dispersal be provided. An option of capturing and transferring owls between HCAs or raising owls in captivity and releasing owls in HCAs to compensate for dispersal has been suggested, for example. Such is unproven technology and not in keeping with the aim of ESA and NFMA of providing habitat capable of maintaining a viable population. Such techniques are reasonable alternatives only when no other alternatives exist.

41. QUESTION. "If adoption of your plan is deferred for five years, and the existing SOHA system was left in place, will the spotted owl go extinct in the next 100 years? Will you plan still be valid if it is adopted in five years?

ANSWER. This is a two-part question. First, we cannot be certain that the owl would go extinct within the next 100 years--though the probability of such would be increased. We believe, however, that it would be essentially eliminated from major portions of its current range--certainly as a functioning part of the ecosystem. Some of those locations would likely be critical to the long-term viability of spotted owls. An example of such an area is the Shasta portion of the Shasta-Trinity National Forest, which is a critical linking area between the Northern and California subspecies of the spotted owl.

Second, our strategy as presently described simply could not be implemented in five years if current rates of logging are maintained under existing or preferred alternatives. Continued logging in proposed HCAs would reduce pair occupancy in many of them to well below the 15-20 pairs now believed to be present or potentially present. To be consistent with the strategy, then, this would require reducing distances between the impacted HCAs. And this would mean that the entire mapping effort would need to be redone. It seems unlikely that, after 5 years of "business as usual," this could be done in a way that would provide reasonable assurance for long-term viability of the northern spotted owl.

42. QUESTION. "Consistent with the charter of your committee, would it be accurate to state that your proposed conservation strategy makes protection of the northern spotted owl the highest management priority for all lands subject to the strategy, both inside the HCAs and in the other lands you call the "forest matrix," and permits other uses on all those lands only to the extent those uses do not conflict with protection of the spotted owl?"

ANSWER. The prepared conservation strategy makes protection of the northern spotted owl and the habitat, and ecosystem it "indicates," the highest management priority inside HCAs. Other lands in the forest matrix have been allocated to various uses under newly adopted forest plans or preferred alternatives under plans pending adoption. It appeared to the ISC that such allocation of land to preclude timber harvest along with the application of "50-11-40 rule" would satisfy requirements for dispersal habitat for owls and, perhaps, other associated species. If alterations of management plans occurs in the forest matrix between HCAs, the habitat conditions anticipated under these new plans should be reevaluated to ensure adequate dispersal habitat. This is an additional constraint on management added to others already present, such as protection of water yield and quality, soil stability, etc. It is not accurate to describe the constraints imposed by owl management as "highest management priorities" any more so than it is to so consider any other constraint imposed now or in the future for any other purpose. Our intent was to minimize the effects of these constraints for owls by "overlapping"--that is, where we could, we put HCAs in or partially in Wilderness Areas, parks, and other areas reserved from timber cutting.

43. QUESTION. "Can you offer an opinion as to whether adoption of your proposed conservation strategy constitutes appropriate multiple use of national forest lands in the Pacific Northwest?"

ANSWER. Please see the answer to question number 26.

44. QUESTION. "Your report concludes that fragmentation of habitat due to timber harvesting is one of the greatest threats to the northern spotted owl. I am disturbed that your committee reached this conclusion even though no scientific study has shown fragmentation of habitat to harm spotted owls, and three scientific studies have found fragmentation of habitat to have no harmful effect on spotted owls. Can you explain why your committee reached a conclusion contrary to all three of the studies on this subject?"

ANSWER. We are not sure which studies you are referring to here, but our interpretation of the situation and the interpretation of the Fish and Wildlife Service's listing team is different from the statements in your question. Recent studies by Mr. Joe Myer and Dr. William Ripple indicate that core areas of spotted owls tend to be located in areas that are less fragmented than the surrounding landscape. While the results are not conclusive, there also appears to be a trend for home ranges to be larger in more fragmented landscapes where old-growth and mature forests have been greatly reduced in extent. We think it is a mistake to focus only on the issue of fragmentation because fragmentation is just a measure of the amount of structural heterogeneity in the landscape. It does not take into account the kinds or amounts of vegetation that are present, or the degree of difference between adjacent stand types. Thus, a valley that has been entirely clearcut has a very low fragmentation index, whereas the same valley with a mosaic of clearcuts and old growth would have a high fragmentation index. The latter condition would certainly be better for a spotted owl, even though it is more fragmented than the valley that was clearcut. This issue is complicated, and when you try to reduce it to just an issue of fragmentation, it becomes essentially meaningless. We considered the evidence on fragmentation, amounts of habitat used, and potential predation problems, and reached the conclusion that spotted owls probably will reproduce and survive best in forests that are relatively unfragmented.

Another problem in considering the effects of fragmentation is that habitat loss and fragmentation are highly correlated in many, perhaps nearly all, cases. It is difficult to determine if decline in owl numbers or density in an area is attributable to habitat loss, or to fragmentation, or to some combination of the two. In our collective opinion, habitat loss that simultaneously produces fragmentation produces a set of circumstances that is not favorable to spotted owls.

45. QUESTION. "Am I correct that the field of 'conservation biology,' on which your conservation strategy is based, is a brand new scientific field which only came into existence during the 1980s and is recognized, even by its defenders, to be in its infancy?"

ANSWER. Some refer to conservation biology as new, but it is "new" only in label, not in substance. Conservation biology is a synthetic field that applies the resources, tools, and techniques of pure and applied sciences (including wildlife biology, theoretical population biology, ecology, and genetics) to the resolution of challenges presented by the accelerating loss of biological diversity. Other roots and facets of conservation biology include plant geography, zoogeography, and landscape architecture, which are disciplines that date back more than a century. What might be fairly viewed as new is the systematic application of rigorous empirical data and theoretical models in the conservation planning arena -- an arena that historically has rarely included scientific method as the basis for problem solving. The ISC report is no more based on "conservation biology" than it is on wildlife biology, forestry, ecology, biometrics, genetics, ethnology, and other biological fields.

46. QUESTION. "Am I also correct that there is not standard textbook in the field of conservation biology and that no classes in the subject had ever been offered in universities until the past three or four years?"

ANSWER. Again, the component areas of scientific endeavor that make up the multidisciplinary field of conservation biology have long been represented in university curricula and general texts. Courses in conservation biology per se generally utilize three basic references, Conservation Biology: An Evolutionary-Ecological Perspective, by Soule and Wilcox, Conservation Biology: The Science of Scarcity and Diversity, by Soule, and Viable Populations for Conservation, also by Soule, as well as diverse source material from other established fields. The answer to question number 45 refutes the contention that conservation biology is "new." It is likely that there were courses offered titled "conservation biology" only within the past 10 years. But, we are not certain of that and fail to discern what it has to do with the ISC report.

47. QUESTION. "Do you know of any 'conservation strategy' for wildlife species, based on principles of conservation biology, which has ever been tested in the real world?"

ANSWER. Yes. In its reauthorization of the Endangered Species Act in 1982, Congress facilitated the resolution of conflicts between land development and conservation with the so-called "Habitat Conservation Plan" process of Section 10(2). Congress justified the amendment pointing to the San Bruno Mountain Habitat Conservation Plan, which focused on the mission blue butterfly as a model. Since the amendment, habitat conservation plans or agreements have been successfully implemented for the fringe-toed lizard, the Bay checkerspot butterfly, and several other species.

48. QUESTION. "Do you agree that the field of conservation biology has not yet been fully accepted as an area of scientific endeavor equal in rigor to the hard sciences such as physics and chemistry?"

ANSWER. The ISC wholly disagrees with this contention. Indeed, the application of scientific method to the conservation planning process makes that process every bit as rigorous as other sciences, including chemistry and physics. That the hypotheses and experiments in different fields can differ greatly in structure, content, and complexity is a given; all else is value judgement.

49. QUESTION. "I understand that the study of wildlife biology is the study of the behavior of animals. In that respect do you agree that wildlife biology has a common element with disciplines which study human behavior such as sociology and psychology?"

ANSWER. The discipline of wildlife biology consists of considerably more than ethology (the study of animal behavior). Wildlife biology includes, among others, the disciplines of anatomy, physiology, genetics, animal health, parasitology, nutrition, veterinary medicine, systematics, bioenergetics, systems analysis, nutrition, pathology, population biology, plant and animal ecology, biometrics and other biological subdisciplines, as well as ethology. Ethology is usually considered a subdiscipline within biology rather than a primary component within wildlife biology. There are few wildlife biologists, however, who are specialists in ethology.

50. QUESTION. "Do you agree that wildlife biology is by its very nature a more subjective science than the hard sciences like chemistry or physics?"

ANSWER. No, we do not agree with this statement. In general, the study of wildlife biology, like that of chemistry or of physics, is the investigation of the patterns and processes that characterize the system of inquiry. All three disciplines attempt to make predictive statements about the behavior of systems and must include the probabilistic nature of either biological or physical processes. It is a mistake to confuse predictive uncertainty with subjectivity.

51. QUESTION. "Do you agree that there is inherently a lower degree of scientific certainty to findings in the field of wildlife biology than in the hard sciences?"

ANSWER. Biological systems are no less deterministic than physical systems. Predictive statements about the behavior of both biological and physical systems entail degrees of uncertainty. We are, for example, very uncertain about the future climate of the earth, even though climatological studies are almost exclusively based on physics. Again, it is a mistake to confuse predictive uncertainty with subjectivity. Predictive uncertainty increases, as a rule, with complexity. Life systems are inherently very complex.

52. QUESTION. "In your conservation strategy for the spotted owl, you did not calculate confidence intervals or other statistical measures for defining the scientific certainty of your conclusions, did you?"

ANSWER. The question is based on an incorrect assumption. Whenever possible, appropriate statistical methods were used to verify the validity of our conclusions. Estimates of many parameters, including the finite rate of population change, for example, were tested for significance. This means that confidence intervals were calculated as part of the test. The assertion that owl populations are declining was supported for two of the three populations tested. An additional example of the use of statistical methods was our investigation of the relationship between random sample areas (RSA) occupancy rates and the amount of suitable habitat (a positive relationship was revealed).

53. QUESTION. "Do you have any ways of calculating how likely it is that your conclusions about the current and future prospects of the spotted owl are correct?"

ANSWER. A satisfactory model to compute an exact persistence likelihood for the spotted owl does not exist. However, it is possible to compare different owl management scenarios and rank them in terms of how likely they are to contribute to the species' long-term viability. For example, we can state that a system of HCAs, as we have proposed in our conservation strategy, has a substantially higher likelihood of providing for long-term persistence than a system of clusters of 2-5 single-pair SOHAs.

It should also be noted that, similarily, no satisfactory mechanisms exist to compute precisely the amount of timber that is apt to be available in 100 years or even 10 years. Yet, we predict timber harvests on the best estimates we can make at the moment. This concern about predictability of outcomes in natural resource management should be equally applied across all management scenarios, including those predicting timber, water, grazing, wildlife, and recreation outputs from managed forests. Included are such questions as long-term preservation of site productivity under forest management. The world of natural resource management is filled with various degrees of uncertainty. But that is a general condition and not limited to management for spotted owls. Such statements should also be applied to economic and social analyses done to predict the consequences of the strategy we propose. Management of biological systems is uncertain by its nature.

54. QUESTION. "Do you agree that there was a substantial amount of professional judgement inherent in your proposed conservation strategy?"

ANSWER. If by "professional judgment" you mean appropriate analysis, rigorous use and examination of available data, the answer is yes. If you imply that much of the work was based on subjective and non-rigorous interpretation and lack of analysis, the answer is no. The maps of HCAs in Washington, Oregon, and California, are the result of tests of a large number of hypotheses, in which we used all available data on the spotted owl in an attempt to disprove. The resulting conservation strategy is one that was supported by the available data. Where "professional judgement" was used, the identification of risk was clear and is so noted in the ISC report. And, in any case, the degree of professional judgment was not more (and quite likely less) than commonly applied in other branches of natural resources management. Where judgment was applied, it was the consensus of a group well-qualified to exert such judgment. The extinction of the owl is an irreversible process; the reservation of suitable habitat from cutting is not. If monitoring indicates that the owl populations are faring better than we presently visualize or anticipate, or if research and adaptive management make it possible to produce owls in managed forests at acceptable population densities, forest stands of suitable habitat that are reserved by the proposed strategy can be quickly put on the market, cut, and processed into wood products. Given present knowledge, we can cut suitable owl habitat very quickly and replace it only very slowly over several hundred years, if at all.

55. QUESTION. "Do you agree that in some cases your committee did not have reliable empirical data on which to base your professional judgement?"

ANSWER. Empirical data were available for analysis and inference for all key components of our conservation strategy. Obviously, all scientists lust after and long for more empirical data no matter how much such information is at their disposal--as do we. The information on spotted owl biology is extensive and improving rapidly. No new discoveries in the past five years have shaken the basic information that undergirds the ISC strategy. As we stated in our report, we believe there is no excuse for inaction based on inadequate or incomplete understanding of owl biology.

56. QUESTION. "And am I correct that in those cases you simply had to use your best judgement based on the limited data available to you?"

ANSWER. Professional judgement was never invoked in the total absence of empirical data. There were areas, however, where additional data would have increased our level of certainty. One example is where we estimated probable occupancy levels of HCAs from presence of suitable habitat. Another, is where used data from other species to provide insights into appropriate subpopulation sizes for HCAs. These instances are clearly pointed out in the ISC report and that is by intent. And, where the team did use professional judgment, it was on the basis that the ISC team of 17 included 13 members well experienced in owl research and management, all were well qualified professionally, and that team had just completed the most comprehensive review of literature, management, ongoing research, monitoring, and applicable ecological theory ever undertaken on the northern spotted owl. The collective judgment of such a team should not be taken lightly. Collective professional judgment is always brought to bear in the production of any management plan whether for determining how a lawyer represents a client or a timber management program is derived. The test is whether that judgment is indeed expert, based on existing and accepted theory, and tested by what empirical information is available, and open to peer scrutiny. We strived to meet all those criteria.

57. QUESTION. "And am I also correct that you have no way of knowing if your best judgement may be incorrect?"

ANSWER. Anytime a decision is made in the absence of complete knowledge, there is no way of knowing, with absolute certainty, if the correct decision has been made until the event has happened. All natural resource management decisions are subject to similar uncertainty as are all plans derived by humans. So it is in all fields that require management decisions. That is why we stressed in the report--and again herein--that application of this or any such conservation strategy should be treated as a working management hypothesis, to be validated and amended as indicated by research and monitoring.

58. QUESTION. "Since your plan contemplates that 1,750-2,000 pairs of spotted owls will be permanently protected on federal lands alone, and since fewer than 1,750 pairs of spotted owls have actually been inventoried on federal lands to date, am I correct that your plan is intended not merely to prevent a decrease in the spotted owl population but actually to produce a larger population than is known to exist today?"

ANSWER. No. Approximately 2,000 pairs of northern spotted owls have been located within the past 5 years. We estimate that 3,000 to 4,000 others--in pairs and singles--exist currently. Few, if any reserved areas, which make up the core of this strategy, have been completely inventoried for spotted owls. The conservation strategy we propose would provide for an estimated 1,772 owl pairs--about 44 to 59 percent of the number currently estimated to exist. The proposed conservation strategy envisions a significant decrease from current numbers.

59. QUESTION. "Would you have reason to reevaluate your proposed strategy if you learned that the northern subspecies and the California subspecies of the spotted owl are actually the same subspecies?"

ANSWER. No. Genetic exchange occurs across a boundary between subspecies in the same way that it occurs within the distribution of either subspecies on each side of the boundary. Furthermore, this matter has recently been reviewed by the Committee on Classification and Nomenclature of the American Ornithologists' Union. This is the only group with authority to rule on taxonomic matters concerning birds of North America. Their ruling (August

1989) was that the northern and California subspecies of the spotted owl are still valid and the boundary between them remains at the Pit River, in north central California.

Further, the owl's viability must be considered across its range. The question of subspeciation has nothing to do with the circumstances the species faces in southwestern Washington, for example. As we stated earlier, we proposed a strategy that would satisfy our charter. The NFMA requires that the FS maintain the owl (as any other species) in viable numbers across its range. A change in classification would have no effect on that requirement. Similarly, if the northern and California subspecies were combined, the bird would still be threatened in a large portion of its range as evidenced by the Fish and Wildlife Services listing of the northern spotted owl across its range.

We dealt with the situation as it exists--the American Ornithologist's Union has specified the subspeciation and informed us that no reconsideration was imminent. Simply, subspecies status does not confer any greater or lesser degree of viability. The major factors negatively influencing the species in Oregon, Washington, and California apply regardless of taxonomic status.

60. QUESTION. "Federal agencies have been following spotted owl management plans in Oregon and Washington for ten years which are far less drastic than the plan you proposed, and there are far more owls known today than ten years ago. What real evidence do you have that the existing agency plans have not been working to adequately protect the spotted owl?"

ANSWER. First, a proper understanding of the answer to this question depends on understanding the nature of animal population responses to declining habitat. For example, imagine the response of a fish population to a drying lake. As the lake level drops, surviving fish are crowded into a smaller total area and eventually into remaining pools in deeper parts of the lake. Population density increases, at least for a time, in these pools. If we were to sample populations only in these pools, without reference to the total lake situation, we would tend to conclude that the fish population is healthy--even more so than before. Such a packing phenomenon has been shown to occur in numerous well-studied examples among vertebrate species, including birds. The same, based on available data, appears to be occurring with spotted owls in Oregon and Washington today. Further, the more intensively the search for individuals of a species the more that will be found until all are located. As research intensity and monitoring has increased and covered new areas, more "new" birds have been located. This is a result of increased search effort. It is most unlikely, given the rate of habitat loss, that this increase in "known" birds is reflective of any increase in population. Please see the answer to question 13.

One consequence of this packing phenomenon will be an inability to detect, at an early date, that the current management plan (whatever it is) is not working. Owls displaced when their home ranges are logged will be forced to find some replacement habitat. This means that even single-pair SOHAs that have been vacated by natural causes (for example, predation or disease) will be reoccupied faster than would occur in a stable population because many more owls (displaced owls plus juveniles) will be seeking new habitat. This will create a lag in ability to detect a decline in the occupancy of SOHAs, even though such a decline will be an inevitable consequence when all suitable habitat not now in SOHAs or reserved for other reasons has been logged and all displaced owls have either died or managed to find unoccupied suitable habitat.

All demography data presently suitable for analysis show a declining population of northern spotted owls. This includes populations in three demographic study areas: a small but statistically significant decline on Forest Service land in northwestern California, a large and statistically significant decline on BLM lands in southern Oregon, and a small but not statistically significant decline on Forest Service land in the Olympic Peninsula.

In several areas, but especially in the demographic study area in northwestern California and on BLM lands in southern Oregon, evidence indicates a higher than normal rate of immigration of adult birds into the population. The source of these birds is probably from loss of breeding habitat in their home ranges in areas recently logged or burned.

The turnover rate (rate of loss and replacement of one or more members of a pair) is extraordinarily high on BLM lands in southern Oregon. Such conditions tend to occur in other species where habitat amount and/or condition are declining to the point that birds cannot generally reproduce well. Breeding attempts may occur but often fail. Divorces are frequent. Populations tend to shrink back to only the best remaining habitat. We believe the evidence from spotted owls on BLM lands in Oregon indicates that such a phenomenon is now in progress there.

Numerous studies of birds and other groups of vertebrate animals (not cited in our report) all point in the same direction. Small populations tend to "wink out" (go extinct) relatively quickly. We know of no exceptions to this pattern, so we believe it is the same for spotted owls. The spotted owl management plans now in place in Oregon and Washington provide relatively isolated patches of suitable habitat (SOHAs) for small clusters of owl pairs or for single pairs. In some instances, these patches occur in pairs or triplets fairly close together. But even populations of three pairs generally wink out relatively quickly for all other species studied to date. Current management plans acknowledge the importance of dispersal among owl sites to maintain population viability, and they follow the distance between SOHAs guidelines not unlike those recommended in our strategy--6-mile separation for single-pair SOHAs and 12-mile separation between units with two or three pairs. We presume that these distances assumed some necessity for dispersing owls to be able to locate other owls in suitable habitat. But if the 6-mile separation is based on some "safe" dispersal distance, then the loss of a pair from a single-pair SOHA automatically increases the distance that a dispersing owl must travel to have any chance of finding other owls on suitable habitat and they have much smaller "targets" then a 20-pair HCA. Current management plans assume that only about half of all available SOHAs will be occupied at any given time (because the amount of suitable habitat provided is considerably less than that shown to be used by radio-tagged spotted owls). With an occupancy rate of 50%, this means that the true distance between occupied single-pair SOHAs would be considerably more than 6 miles, which was judged to be "safe" when the current management plan was adopted.

When current spotted owl management plans were implemented by the Forest Service in Oregon and Washington, it was assumed that Wilderness Areas and other lands dedicated to uses other than timber production would provide relatively large clusters of pairs of spotted owls in the same general area--much proposed in our 20 or more pair HCA strategy. Most of these Wilderness Areas had not been inventoried by the time the current plan was implemented, so this was actually an unknown. About 871,000 acres of suitable habitat are included in Wilderness Areas and about 625,000 acres of suitable habitat in land allocations precluding timber cutting. This represents about 12% of all forest land on Forests with spotted owls and about 36% of the combined remaining habitat of some 1,496,000 acres. The amount and arrangement of suitable owl habitat in these areas indicate that from 2 to 15 pairs probably occur in each of the various Wilderness Areas, with an average cluster probably capable of supporting about 5 pairs. Our strategy incorporates these Wilderness Areas, although by themselves they fall far short of meeting the needs for long-term viability of spotted owls.

Whether or not the proposed strategy is "drastic" is not a biological description. We have proposed a strategy that we think is likely to succeed to replace one that was likely to fail. Failure is "drastic" in the biological sense as is a strategy with an acknowledged "poor" chance of success. The strategy proposed gives up a significant portion of the population remaining in such a way as to maintain owls and still allow continued cutting of suitable habitat. Such is certainly "drastic" (but still defensible) when dealing with a threatened subspecies.

61. QUESTION. "The Forest Service has adopted a new and different spotted owl management plan every other year for the last decade, and every time it adopts a new plan it tells us that the last plan was incorrect. What reason do we have to believe that your plan is any better than any of the previous plans?"

ANSWER. To say these plans were "incorrect" is incorrect. They were inadequate to give a high enough probability of success to satisfy the position of the public, the scientific community and, ultimately, the courts. That is why our charge was to develop a "scientifically credible" strategy. That's a first and was mandated by circumstances. Unless the law(s) is changed, such "scientific credibility" seems to be a prerequisite for a plan that will stand challenge.

Societal interests change. Research studies provide new information on the species' requirements and population status. These two factors combined have led to revisions of the spotted owl management plans over time. It is noteworthy that every revision has been to increase the size and amount of habitats. This is because there has been greater evidence of threats to viability of the populations, and because administrative, political, and social interests has been such that we are willing to allow considering a greater allocation of habitats to the species. The reasons that we believe the strategy we present is a decided improvement over previous plans is clearly spelled out in the report and would take far more space then is available here. Please refer to Appendix O of the ISC report. The peer reviewers expressed the opinion that the ISC report was a marked improvement over current plans with a strong probability of success compared to a "poor" chance of success for the current strategy documented in the FSEIS by the Forest Service.

62. and 63. QUESTION. "You have no direct evidence that the spotted owl population is declining today, do you? In fact, you couldn't possibly have such evidence because you don't know how many owls there are today or how many there were in the past, do you?"

ANSWER. Spotted owls were first identified as a species of concern because of their association with old-growth forests and the decline in the acreage of such forests. This strong relationship with suitable habitat has been repeatedly demonstrated and the association seems abundantly clear to us. Such was also clear to the Fish and Wildlife Services Listing Teams and, we believe, to most biologists. Political pressure has lead to repeated studies to assure the previous studies were indeed correct. This is demonstrated in Appendices F, G, and H of the ISC report. Bart and Forsman (unpubl.) formally documented the change in density of spotted owls as old forests are replaced with younger forests by comparing densities in areas dominated by clearcuts and young forests with adjacent areas where old-growth forest was more abundant (Appendix G, Table G8). Computation of rates of population change based on measures of rates of birth and death likewise confirm significantly declining numbers of resident adults on both study areas where sufficient data exist to allow calculations. These results are easily interpretable because the measures of birth and death on the study areas are consistent among years.

Analysis by the Fish and Wildlife Service Listing Team also indicates dramatic population declines. In addition, there are numerous observations of spotted owls disappearing from study sites concurrent with harvest of the suitable owl habitat. In light of the above we hold that it is unnecessary to have accurate measures of rangewide populations in the past to compare against current numbers in order to determine with a high degree of certainty that a marked population decline has occurred and is continuing.

The ISC report clearly demonstrates the general preference of spotted owls for suitable habitat (which is most commonly found in mature and old-growth forests) and the many times higher densities of owls found in such forests. Such habitat is being removed by logging at the rate of some 64,000 acres per year on Forest Service lands in Washington and Oregon alone. Such logged areas will not return to suitable habitat conditions for at least 80-150 years. We assume, as we believe most biologists would, that there has been and is a relationship between habitat loss and population size for any species.

If there is a burden of proof, it should be the reverse of the question presented. As common sense, logic, experience, biological theory and historical evidence would indicate that a species' number declines with loss of habitat, what proof is there that such is not occurring for the northern spotted owl?

In the operative sense, this question became moot when the U.S. Fish and Wildlife Service Listing Team recommended that the northern spotted owl be listed as "threatened" throughout its range and the Director of the fish and Wildlife Service so decided. Unless that decision is somehow overturned or altered by the political process, the subspecies is considered "officially" to be in decline. This decision was based on a separate analysis done by the Fish and Wildlife Service (Anderson, David R. et al. 1990. 1990 Status Review, Northern Spotted Owl Strix Occidentalis Cauring. U.S. Fish and Wildlife Service, Dept. of Interior, Washington, D.C. 95p.).

Also, please refer to the answer to question 60.

64. QUESTION. "If your goal were to avoid the extinction of the subspecies, do you believe you could adopt a conservation plan based entirely on Forest Service lands in Oregon only, or Washington only, or California only?"

ANSWER. Such a conservation strategy could be devised. However, long term chances of success would be considerably less due to the increased risk inherent in concentrating the population in a smaller area. Amputation of parts of the range would severely compromise adaptability of the species as such amputation reduces genetic variations that are apt to have developed under varying selection pressures. Such concentration magnifies the effect of any large scale environmental perturbation (catastrophes) that will, inevitably, occur within the much reduced range. Further, it would require a dramatic increase in reserved lands within the selected area to maintain adequate numbers to assure a good chance of long-term viability.

In short, such a strategy would require increases in number and sizes of HCAs, decreases in distances between HCAs, etc. in the area selected for owl conservation that would offset any gains for timber supply in areas amputated from the occupied range. Also, such would not, in our opinion, be in keeping with NFMA and ESA and would require a change in law or regulations or both in order to be a politically viable course of action. Of course, we are not experts in legal matters and this is merely an opinion on our part.

65. QUESTION. "Many people believe that the states of Washington, Oregon, and California either lack the legal authority to adopt your conservation plan or will refuse to adopt it. If this happens, can your plan work?"

ANSWER. Yes. There would, however, be increased risk for long-term viability. The State of Washington lists the subspecies as "endangered." The State of Oregon calls it "threatened." California's Department of Fish and Game says it is a "species of special concern." The proposed HCAs involving state lands were enclosed with dashed lines and identified as "recommended" to indicate their special status. These lands, whether or not they are ever committed as HCAs represent the most realistic chance to maintain owls in southwest Washington and northwest Oregon. State agencies or governments pressuring the managers of federal lands to be concerned about state listed species, while exhibiting lack of commitment when it comes to management of state lands, seems more than somewhat inconsistent. But, we recognize that as the business of the States. We proposed. It is their job to dispose when it comes to state lands and in keeping with the listing of the subspecies by the states.

Questions Submitted by Senator Mark Hatfield

66. QUESTION. "If we accept as a fact that the spotted owl is in some peril as a species, are there other strategies that would insure the owl's survival? For example, could we elect to concentrate our protective efforts in a lesser geographical area where owl populations are relatively healthy rather than throughout its range and still meet the survival objective? Would such an alternative result in less total acreage allocation to owls?"

ANSWER. Yes, other strategies might also ensure the owl's survival. Certainly, any strategy that saves more habitat in larger HCAs, or more HCAs of the same size but located closer together, or both or a dedication of corridor of mature forest habitat between HCAs would increase the chance of the owl's survival over a 100-year period. However, if we reduce the protective efforts to something less than proposed in our strategy, we would increase the chance that the owl would experience localized, and perhaps ultimately, general extinction. The importance of maintaining a population over an extensive geographic area is to provide the only hedge we can against major catastrophic events. This is the "den Boer effect" referred to on p. 285 of the ISC report.

For example, suppose that it was decided to exempt the Oregon Coast Ranges from the conservation strategy. This would eliminate one major avenue for maintaining north-south population continuity throughout the current distribution of the spotted owl.

A major catastrophic event in the Cascades (for example, the explosive eruption of Mount Hood or a fire on the order of the Tillamook burn[s] or "the 21 blowdown" in Washington state) could interrupt the only other major avenue for north-south gene flow. It could isolate the Washington population from the

Oregon population for decades, even centuries. Each remaining subpopulation would then need to maintain viability without immigration from the other. We did not assess the risk of such an event, but it is finite and would simply add to the risks of survival for the subspecies.

Further, if the choice were made to compress the presently occupied range of the owl, it would be prudent to compensate for the increased risk by increasing the number and size of HCAs in the remaining range, decreasing the distance between HCAs dedicating corridors of mature trees between HCAs, etc. where the owl is to be maintained. Such compensations would likely offset any gains from a triage decision to let owls go locally extinct in other parts of the presently occupied range.

67. QUESTION. "In your opinion, could extensive owl research definitively describe the so-called 'structure' that seems to make old-growth forest the owl's preferred habitat? If so, how long would it take to determine if there is a reasonable chance that modified forest management practices might replicate that 'structure' in second growth?"

ANSWER. Current research is aimed at characterization of the attributes of forest stands used by spotted owls. It is difficult to tease apart the specific attributes of the forest and its structure that cause owls to be successful or unsuccessful. Simple occupancy by owls is not sufficient to demonstrate adequacy of the forest stands used by owls. We need to document adequate survival and reproduction rates (lambda = 1.0+) of a sample of owl pairs over time (10 years) in each region where some modification of current forest management practices is attempted. Such a research effort will require teams of forest and wildlife scientists experimentally manipulating forest landscapes on the scale of Ranger Districts. Optimistically, several to many decades will be required to gain sufficient information so that it would be prudent to shift from an HCA-based conservation strategy to one that relies primarily on characteristics provided in the managed forest. The length of time required to make such a determination will be a function of the resources devoted to the study and the time required for the forest to develop following experimental manipulations.

68. QUESTION. "The ISC suggests only one option for ensuring survival of the northern spotted owl--the report's recommendation for HCAs and management of the intervening lands. Yet we have heard that the Scientific Committee considered at least five other approaches including the dedication of all forest lands to 'long rotations.' The report is silent on these other options and why they were rejected. What comprehensive options for ensuring survival of the northern spotted owl, other than the report's recommendations, were seriously considered by the scientific committee? Why were these other option rejected?"

ANSWER. The options described below are among those given serious consideration by the ISC:

-long rotations of 150+ years on all lands

-establishment of continuous corridor 12 miles wide throughout the range of the species in which timber cutting would be terminated

- large HCAs (30, 40, and 50+ pairs) with smaller HCAs in between
- current prescribed HCAs connected by corridors 3-6 miles wide
- current HCAs with individual SOHAs around all sites with pairs of nesting owls outside the HCAs
- current HCAs with individual SOHAs outside the HCAs and a continuous 6 mile wide corridor connecting HCAs
- distances between HCAs of less than 12 miles
- all alternatives described by the Forest Service's FSEIS for spotted owl management
- cease all harvest of owl habitat

Among the reasons for rejecting these options was the question of what connectivity design was necessary--many alternatives for such connectivity mentioned above exceeded our final recommendation which we felt to be adequate.

Additionally, other options produced an increased effect on annual sale quantity without appreciable compensating increases in the probability of success in maintaining owls. Other options we considered to be unlikely to be successful and therefore lacking scientific credibility. We could have presented each of these schemes. But, to what end? We did not have time to fully develop each scenario we did make and given the political furor over the recommendation, it is obvious that such would have been an exercise in futility. We will be most happy to fully develop these alternatives if there is any serious possibility what so ever that they would be seriously considered and there was any chance at all of adoption. Every political pressure is to find "some innovative way" to reduce the economic impacts of the strategy that we did recommend.

69. QUESTION. "Is restoring the owls to areas where they do not exist today an essential part of the survival strategy or were you simply trying to meet the mandates of the ESA to restore it throughout its range?"

ANSWER. The conservation strategy we propose does not restore owls but rather increases densities of owls in such areas as the northern Oregon Coast Ranges and southwestern Washington. In areas such as these the spotted owl populations are currently either at very low population levels or at risk of extirpation over the short term. The NFMA is specific in directing that species be maintained "well distributed." The ESA recognizes species at risk "in all or significant portions of their range." However, the ESA makes no demand to restore the species to all formerly occupied habitat. Maintaining a species well distributed throughout its range markedly enhances its chances for continued existence--as recognized in both ESA and NFMA. The ISC was following both what we considered the direction of the law and dictates of biological theory by attempting to maintain the spotted owl well distributed throughout its range.

70. QUESTION. "Was it your intent to freeze the land allocation on all national forests in the form of the final forest plans as you know them? As an example, the proposed final forest plan on the Willamette NF has approximately 50 percent of the forested land available for timber harvest while the proposed

final forest plan on the Umpqua NF has approximately 70 percent of the forested land available for timber harvest. What evaluation criteria led you to endorse the land allocation in these plans?"

ANSWER. It was evident from examination of sample areas and personal knowledge of the field situation that various allocations already in place to protect resources through reservation from timber cutting would complement the 50-11-40 rule by providing patches or stringers of more mature trees and better owl habitat. It was the intent to incorporate whatever of these area (stream corridors, visual corridors, soils withdrawals, etc.) that currently or potentially existed to bolster the probability of adequate connectivity. The percentage of the land base dedicated to timber production is significantly altered by the establishment of the HCAs, and the comparison you present does not consider that.

71. QUESTION. "Dr. Thomas, your report recommends that lands declared unsuitable for timber production under the federal forest plans not be put back into the timber base. Does this stipulation cover all types of lands that fall into this category including the existing SOHA system, stream corridors, 'backcountry areas,' and intensive recreation areas? What criteria did you use in deciding which, and how much, forested land outside of the HCAs need be declared 'unsuitable' for timber production for your owl conservation plan? As mentioned above, BLM has a much lower level of withdrawal than the Forest Service. How can the policies of both agencies meet the requirement here?"

ANSWER. We need to clarify this question by distinguishing between our recommendations for application inside and outside HCAs. Under our proposed strategy, all lands inside HCAs, (including lands now withdrawn from the timber base), would be excluded from timber harvest until such time as research in areas outside HCAs clearly shows how to harvest timber without negatively impacting the breeding and dispersal of spotted owls. Because extensive areas of high quality habitat for spotted owls exist outside of proposed HCAs that will likely be cut, we anticipate an eventual decline in the total number of owls to about 40-60 percent of their present level if our strategy is implemented as proposed. Opportunities for the needed research are abundant and widespread outside HCAs. We strongly recommend that these opportunities be exploited for research and demonstration purposes.

With one exception, all lands now designated as unsuitable for timber harvest outside HCAs would remain withdrawn from the timber base. That exception involves lands now designated for SOHAs that were not included in HCAs. As specified in the rule set (for example, see p. 29 of the ISC report), "At least 80 acres of suitable owl habitat should be designated as HCAs around activity centers of up to seven known pairs of owls per township in the forest matrix." The "forest matrix" is defined as all forest lands outside of designated HCAs. Many of these locations will undoubtedly be in existing SOHAs, which means that all but 80 acres of SOHAs selected to be among the seven possible activity centers per township in the forest matrix would be opened up for timber cutting under our proposal. All lands now in SOHAs that are not in HCAs or other allocation precluding timber harvest and that are not selected to be one of the seven possible activity centers per township would be available for timber harvest.

Available information on juvenile spotted owls indicated that they are unlikely to restrict dispersal movements to corridors of habitat specially designed and managed for dispersal. Instead, therefore, we envision a general forest landscape between HCAs that will enable juveniles to disperse through it without too many being killed by predators or starving to death. For the most part, excepting checkerboard ownerships where timber cutting has been intensive under short rotation of less than 80 years (i.e., BLM lands), current management practices should satisfy this objective over the long term. Some time may be required to realize the 50-11-40 rule. Included as acceptable dispersal landscape are visual corridors, riparian corridors, and streamside-management zones, which contain possible stopover spots. In addition, forests on lands incapable of commercial timber production due to a low site index, on soils prone to slumping or unacceptable erosion rates, and in special management areas for pileated woodpeckers and pine martens also provide habitat that we believe to be suitable to support dispersal of juvenile owls. Finally, in a fully regulated forest with a rotation schedule of only 80 years, 50% of the landbase would support trees at least 40 years old. Taken together, we concluded that these various conditions would generally assure a forest coverage of at least 50% in trees at least 11 inches in d.b.h., and with a canopy cover of at least 40% (the "50-11-40 rule") now or in the forseeable future. Discussions with several forest managers assured us that this would be the case nearly everywhere in the forest matrix within the range of the northern spotted owl. Exceptions may occur where timber cutting has been unusually heavy--particularly where rotations of less than 80 years were anticipated or where managers have held roadless areas in the timber base despite their being held in limbo as to status, forcing premature returns to roaded areas for additional timber cutting sooner than had been anticipated. Where such exceptions occur, it may be symptomatic of other problems related to sustained yield.

All forest components may be counted toward the 50-11-40 rule, including riparian corridors, visual corridors, etc. And, management guidelines for those components are assumed to have well-founded reasons in their own right. To move away from those guidelines would revoke the bases or justification for their implementation. Further, based on our understanding of Forest Plans and their land allocations that provide patches of more suitable owl habitat, we determined that these more closely provided for the desired future conditions outside the HCAs than the 11 inches d.b.h. provision of the 50-11-40 rule.

We view the 50-11-40 rule as assuring adequate suitable conditions for dispersing spotted owls. We believe that to go below those conditions would approach minimum conditions for successful dispersal. We considered it imprudent in a conservation strategy for a threatened species to manage for minimal habitat conditions. This is particularly true in a strategy that gives up 40-60% of the population extant upon listing. The BLM lands in Oregon, due to checkerboard land ownership and relatively rapid (as compared to Forest Service lands) liquidation of mature and old-growth timber by BLM and private landowners, is particularly deficient in dispersal habitat. It should be noted that the 50-11-40 rule is applied by ownership class--i.e., BLM is requested to meet the rule only on its own lands. Hence, the checkerboard ownership is not the cause of BLM's inability to meet the rule. Recent announcements by BLM's Director of a 2-year plan where all harvest of suitable habitat will occur in the forest matrix exacerbate an already weak link in the owl strategy. But, this cannot be evaluated by ISC on the basis of information made available so far. In areas of mixed ownership, the compliance with the 50-11-40 rule would be computed separately for each owner, based on their proportion of ownership (see Appendix Q, p. 327 of the ISC report). These prorated quotas for federal lands would be required for 3 years following implementation of the conservation strategy. At the end of that period, the interagency body appointed to oversee the plan's implementation would re-evaluate the 50-11-40 rule as it applies to lands in mixed ownership (as for most BLM ownerships). We allowed the marginal conditions on BLM lands, during this interim, only because of the better conditions on FS lands and the impacts on timber harvest rates on the more heavily cut over BLM lands.

Another exception may be lands that were cut and have not been successfully regenerated due to a myriad of problems. Where research results (such as the COPE Program) have developed technology to reforest those sites, and such reforestation has occurred, such lands should be restored to "suitable for timber production" and not held in a reserved from timber cutting status.

72. QUESTION. "If the northern spotted owl is listed under the Endangered Species Act, and no critical habitat is designated at the time of listing, what regulations under the Act, if any, apply to timber harvest activities on private lands? On state-owned lands?"

ANSWER. The Fish and Wildlife Service and the courts are responsible for interpretation of the ESA and regulations issued pursuant thereto. We respectfully refer you to the Fish and Wildlife Service for an answer to this question.

73. QUESTION. "If critical habitat on privately-owned land is designated in the listing decision, what regulations apply to timber harvest on those lands? On state-owned lands?"

ANSWER. Please see answer to question 72.

74. QUESTION. "In the report, the authors advocate that private land within HCAs provide 'foraging habitat.' How would private land management have to change to meet that requirement? Does the Committee advocate that private land intermingled with federal land outside the HCAs meet the 50-40-11 rule, too? Or would it apply only to corridor-type areas between HCAs? In either case, does the ISC suggest that this standard apply to private as well as public forest land?"

ANSWER. Management of lands to provide foraging habitat should focus on rotations of 80 to 100 years, with emphasis on leaving large scattered trees, snags, logs, and other "legacies" of the more diverse mature and old-growth forest.

Application of the 50-11-40 rule to private land would be strictly voluntary on the landowner's part. The ISC report exempts private land from any mandatory involvement. If it is not applied and monitoring demonstrates the need for adequate connectivity within the landscape, some further measures to provide it on public lands may have to be used if private lands are not contributing. The owls have no sense of who owns the land--they react to habitat condition. In intermingled ownerships habitat may be a problem for this species in the long term if all parties are not cognizant of the habitat needs.

Most private lands will have stands of trees that are 11" dbh or more with 40 percent canopy closure for at least some time during a rotation. Those that do, will contribute to providing feeding and dispersal habitats.

But, let us be quite clear. The ISC report makes no demands on private lands whatsoever. This applies both to private lands within and between HCAs.

75. QUESTION. "If a recovery plan is adopted by the USF&WS under the ESA that includes private lands, what regulations can be imposed on timber harvesting? On state-owned lands?"

ANSWER. A recovery plan is intended to identify the goals and objectives that the Service feels are necessary to recover or delist a species. This plan carries no regulatory requirement for any landowner. In developing a recovery plan, the Service considers what is feasible as well as what may be necessary to delist the species. All recovery activities that would be recommended for any lands, either Federal or private lands, would fully include public participation in discussions prior to the identification of any recommendation that would affect those lands. The ISC is not expert on the intricacies of the application of recovery plans, and we are not privy to the intent of the F&WS

regarding what such a plan may be. This question is best addressed to the Fish and Wildlife Service.

76. QUESTION. "Very little 'old-growth' timber (by any definition) remains on private forest land in Oregon. If, in fact, the northern spotted owl is dependent on such areas for essential habitat, why are managed, second-growth forests included within the proposed Habitat Conservation Areas?"

ANSWER. Please see the answer to question number 98.

77. QUESTION. "A massive northern spotted owl inventory-survey effort is currently being conducted on private forest land--again, primarily managed, second-growth stands--throughout Northern California, Western Oregon, and Western Washington. What level of information or evidence would this effort have to produce to convince the ISC to re-examine the fundamental assumption in the report: that large blocks of forest land must be placed totally off-limits to all management activities to ensure the survival of the owl?"

ANSWER. Management activities within HCAs are not prohibited. For example, the ISC encourages regeneration of logged stands and fire protection, and road building is discouraged but permitted. Any management that can be shown to provide short or long-term benefit to owls is possible once it is proven.

We would not classify the survey effort as "massive," but the level of effort is significant. Several other things would need to happen. First, it would be necessary to demonstrate that the density of spotted owls in young, even-aged stands is near that recorded in habitat now defined as superior. Second, it would be necessary to show that populations in such stands are self-sustaining, that is, they are reproducing and surviving well enough over a long enough period to indicate that the population is viable and not a mere population "sink" for other more productive areas. Third, it would be necessary to document these relationships in different regions, as findings from one region may not apply to another area with a different forest type and prey base. At the very least, such studies should be done on the east slope of the Cascades, in southwest Oregon, the western hemlock Zone (northwestern Oregon, western Washington), the coastal redwoods, and northwestern California mixed conifer. Fourth, there would have to be some means of insuring that suitable habitat on such areas would be sustained over time--i.e., if stands of 70 years of age did in fact provide adequate habitat, but were harvested at age 80, there would be a limited benefit to owls.

Although we are aware that some of surveys conducted by industry personnel in California have been successful in locating owls in good numbers, we are equally aware that previous surveys on state and private lands in northwestern Oregon and Washington have documented many fewer owls in much lower densities. We do know that spotted owls occur on industry lands in Oregon and Washington, but most such owls located to date have been in unmanaged stands of old-growth or unmanaged stands characterized by a mix of young, mature, and old-growth forest and in much lower numbers than in California. Very few pairs have been found in even-aged, intensively managed stands in Oregon and Washington. Also, please see the answers to questions 31 and 109.

78. QUESTION. "Dr. Thomas, in your view, are 'New Forestry' techniques such as those developed through Dr. Franklin's research, acceptable within HCAs? If so, please explain how you envision such a management prescription being carried. If not, please explain why not."

ANSWER. At the present time, we view "new forestry" as largely experimental and have no evidence that it can be carried out, in a way that will reliably and consistently produce habitat for spotted owls. Theoretically, such habitat production should be possible, but many hurdles must be overcome to get over before a strategy that relied on such techniques could be considered scientifically credible. Until such time as the techniques are proven, we believe that research must be limited to areas outside the HCAs. The strategy we propose makes HCAs the keystone for success and they are not the place for experimentation. Please see the answer to question number 5.

79. QUESTION. "The Thomas Report suggests the 50-11-40 rule as a guide to silviculture prescriptions for private lands that are in some way linked to Habitat Conservation Areas (HCAs). Can the same kind of management be applied to HCAs on federal lands in California?"

ANSWER. The purpose of the 50-11-40 rule is to ensure that minimum conditions for dispersal will exist between the HCAs--not within HCAs. These conditions, at least 50% of the forested areas with at least 11 inch diameter trees and at least a 40% canopy closure, will not as a rule provide suitable nesting habitat. Since stands resulting from applying the 50-11-40 rule are not likely to provide for all the life needs of spotted owls, it would not be appropriate to apply this type of management to HCAs on federal lands. The HCAs are designed to provide for all life needs of spotted owls and afford the pairs found in them adequate conditions to perpetuate the species. The 50-11-40 rule is designed to facilitate dispersal. Again, allow us to reiterate that the ISC report makes no demands on private land.

80. QUESTION. "Given the different conditions in California, can the minimum distance of 12 miles between HCAs be increased and still adequately protect the owl? Alternatively, could the percentage of juvenile owls thought necessary to successfully disperse between HCAs be lowered and still provide adequate dispersal in California?"

ANSWER. No. No adequate data exist to support a contention that dispersal distances are any different in California than elsewhere in the range of the owl. The guidelines on distances between HCAs were based on knowledge of dispersal distances of radio-tagged juvenile spotted owls--many of these in California. We do believe, however, that a greater variety of habitat types can contribute to meeting the 50-11-40 rule in California as compared to Oregon and Washington. For example, hardwoods such as tanoak and live oak with well-developed structure (for example, 30-50 feet high with relatively open understory beneath a dense crown) could contribute to meeting the 50-11-40 rule.

Questions Submitted by Senator Hatfield on Behalf of

Governor Booth Gardner of Washington

81. QUESTION. "Is there any way of calculating how likely it is that the conclusions about the current and future prospects of the spotted owl are correct?"

ANSWER. No model currently exists, or will probably ever exist, that allows us to project into the future with absolute certainty--about spotted owls or any other output from the forest (including trees, water, and other wildlife). However, we can state that if our current estimates of the vital rates of the spotted owl were to characterize future populations, the species would continue to decline in numbers until an equilibrium is reached with a relatively stable habitat condition. In addition, we can state that if the current rates of loss of suitable owl habitat due to timber harvest were to continue into the future with no plan for strategic reservation of suitable habitat, the species' population size would continue to decline.

82. QUESTION. "If it were concluded that substantial parts of the plan could not legally or practically be implemented, what recommendations would be given as to whether the balance of the plan should be implemented? What are the essential key components of the plan?"

ANSWER. The question is not specific enough for us to answer with any degree precision. Each significant deviation from the prepared strategy would decrease the probability of success. Deviations could occur in numerous ways and in a myriad of degrees of magnitude of departure and in many combinations of departure. Such could run to hundreds of combinations. The key elements of the plan are: 1) distribution within the range; 2) adequate cluster sizes of breeding pairs; 3) adequate habitat within and between clusters; 4) distances between clusters that enhance exchange of birds between clusters. Further, some conservation strategy will have to be implemented to meet the requirements of the ESA and the NFMA. It seems likely to us a satisfactory plan will have to be able to withstand scientific scrutiny and potential legal challenge. Alterations that weaken some part of the plan can likely be compensated for, to some degree, by increasing numbers and sizes of HCAs, moving HCAs closer together, improving habitat between HCAs, or extending the strategy to non-federal ownerships.

83. QUESTION. "What are the responsibilities of the oversight committee for implementation of the conservation strategy?"

ANSWER. We recommended that the oversight committee review any proposed alterations in the strategy such as shifts in location of HCAs, or road locations, or timber sale layout to assure compliance with the intent of the strategy considering "real world", day-to-day problems of management. This was intended to provide required flexibility and enhance the chances for success of the strategy.

84. QUESTION. "What was the scientific method used to verify whether the distance between HCAs called for in the plan is in fact required for the protection of the spotted owl? Is it reasonable that the distance between HCAs is an issue where reasonable, responsible persons could easily reach different decisions through the use of judgment?"

ANSWER. The scientific method used is one of hypothesis testing. Our entire conservation strategy is basically a hypothesis that only time, monitoring, and further research can confirm or deny. However, such would be true of any such conservation strategy or, for that matter, any natural resource management strategy including timber management. We used a Delphi approach (a systematic means of evaluating data that does not constitute full knowledge) to arrive at the distances between HCAs. Furthermore, it is our opinion that if this same question were addressed by other teams of scientists with the same or greater collective level of knowledge about general animal ecology, wildlife biology, the vital role of dispersal in population dynamics, and, most importantly, spotted owl biology and population dynamics, they would settle on a guideline near that proposed in our strategy. If such group opinion varied significantly, it is our opinion that it would be to decrease distances between HCAs to decrease risk of failure in an uncertain situation. Also, please see the answers to question 25 and 118.

85. QUESTION. "Why was the inclusion of young forest (as future stepping stones) considered integral to the strategy?"

ANSWER. We assume you are referring to the "recommended HCAs" in northwest Oregon and southwest Washington where mature and old-growth forest stands are rare. In such instances, the habitat needs to be recovered/replaced over time. Setting up HCAs in habitat-deficient areas are intended to allow the forest within such HCAs to develop into suitable habitat in the future. And, even before they mature into suitable habitat, they will contribute to improved habitat conditions for dispersing owls. HCAs in such are "recommended" (not "designated") for state lands. As the northern spotted owl is listed as "threatened" by the State of Oregon (as an example), it seemed appropriate to give the state a chance to contribute materially to the recovery of the subspecies over time. Also, please see the answer to question 66.

86. QUESTION. "Is new forestry acceptable in an HCA? Can it be substituted as an alternative to preservation in some habitat areas?"

ANSWER. "New forestry" is not clearly defined as yet and, certainly, untested. Essentially, we feel that new forestry techniques should be tested experimentally outside of HCAs. The cutting that will occur between HCAs within suitable and superior owl habitat will offer a myriad of opportunities to test different prescriptions before they are found to be successful and suitable for implementation in HCAs. A more complete response is given elsewhere to essentially the same question. Please see the answer to question number 5.

87. QUESTION. "Did the Committee consider harvest of special products (mushrooms, salal, etc.) to be appropriate within HCAs?"

ANSWER. The ISC considers all forest uses that do not alter habitat suitability for owls or that can be expected to adversely influence owls as compatible uses within HCAs. The harvest of mushrooms and salal are examples of consumptive uses that seem to meet these criteria. The ISC recommended establishment of an oversight committee to deal with questions such as these that are certain to crop up on a regular basis.

88. QUESTION. "What is the projection for owls outside HCAs?"

ANSWER. We estimate that at least half of the owl population (probably more) currently occurs outside of HCAs. We estimate that a significant portion of the population outside HCAs will be lost over the next 25-50 years, assuming no significant change in current plans. This will probably occur as suitable habitat outside HCAs is inexorably reduced by logging in excess of the habitat being recruited from maturing younger forests. Many pairs already exist in marginal habitat or suitable habitat that is far separated from other pairs. These pairs can be expected to "wink out" over time with a poor chance of reoccupancy. This the "Allee effect" described in detail in the ISC report.

89. QUESTION. "There are a number of proposals to increase ASQ outside HCAs. What would be the impact on the conservation strategy if modifications are made to land allocations outside HCAs?"

ANSWER. That all depends on what the modification is and the extent of the modification. Such could have a considerable negative impact. Our strategy assumes that the landscape between HCAs will be maintained in such habitat condition that at least some spotted owls can survive long enough to move from one HCA to another. That is why we proposed the" 50-11-40 rule." We also assumed that many pairs outside of HCAs would persist for some time because they occupy areas where harvest is forgone, selective harvest practiced, or rotations in excess of 80 years are maintained because of visual restraints, soils problems, etc. If those restrictions were relaxed to provide for increased timber harvest the risk to the owl would increase to some degree. If no allowance was made to assure dispersal habitat between HCAs, this could greatly alter the estimates of persistence times for HCAs that we used in deriving the strategy.

The proposed changes would have to be evaluated to see if they would adversely influence conditions for dispersal of owls between HCAs. If these changes produced conditions that would reduce probabilities of successful dispersal, the plan would be weakened and the probability of long-term success reduced. The degree of reduction in the probability of success would depend on the degree of departure from current plans.

90. QUESTION. "What evidence did the Committee use to conclude that the current Forest Service spotted owl management plan (the Spotted Owl Habitat Areas) was not working successfully to protect the owl?"

ANSWER. Please see answers to questions 13 and 60.

91. QUESTION. "Did the Committee consider the impact to the owls of just implementing the Final Forest Plans (SOHAs)? If so, how would owl populations be affected in comparison to the ISC strategy during the next 10 years?"

ANSWER. Please see the answers to questions number 13 and 60 and see pages 39-40 of the ISC report. We did not, however, evaluate the impact of implementing the Forest Plans during the next 10 years. We know that about 64,000 acres of suitable owl habitat are being logged annually, at current rates on Forest Service lands in Oregon and Washington alone. Projecting this 10 years into the future gives a total removal of 640,000 acres, or about 10 percent of all remaining suitable spotted owl habitat (see page 14 of our report). Assuming full implementation of the Forest Plans this would be reduced to some 319,000 acres of harvest of suitable habitat over the next 10 years. This does not included the logging that would occur on Forest Service lands in California nor BLM lands in Oregon of suitable owl habitat. Without a detailed analysis of where this logging would occur in relation to existing owl pairs, the overall effect on the owl population cannot be stated with certainty. Because biologists searching for owls in areas being considered for timber sales during the past 2 years have located owls in an unusually high percentage of such areas, we believe the overall effect of logging on owls over the next 10 years under the current strategy will be considerably greater than the rate of reduction of suitable habitat. Further, depending on where those sales are in relation to proposed HCAs, the impact could be such as to make it impossible to successfully implement an effective conservation strategy after 10 years of additional cutting of perhaps 700,000 acres of suitable habitat.

The main principle guiding the ISC strategy was crafting of a plan that provides for long-term viability of the subspecies. Ten years is far too short a time to make such an evaluation.

92. QUESTION. "What is the science behind the 50-11-40 rule?"

ANSWER. Please see answer to question number 146.

93. QUESTION. "What is the impact of the '50-11-40' rule on proposed thinnings in quarter-townships that do not meet the rule? Would stands in those townships have to "stagnate" until the quarter-township meets the 50-11-40 standard?"

ANSWER. If a given stand were currently of age and condition conducive to commercial thinning and was contributing to meeting the 50-11-40 rule, a thinning that did not reduce the average dbh below 11 inches and the canopy closure below 40% would be in keeping with the rule. Under these criteria, most commercial thinnings could be completed. Pre-commercial thinnings would be acceptable and desirable as thinned stands would more quickly attain an average d.b.h. of 11 inches or more. The 40 percent canopy closure portion of the rule was considered to allow for thinning of "stagnated" stands while still contributing to meeting the rule. In fact, commercial and pre-commercial thinnings can be considered likely to produce stands meeting "50-11-40" faster than would occur otherwise.

94. QUESTION. "Would it be acceptable to apply the 50-11-40 rule to drainage basins, rather than quarter-townships, as called for in the conservation strategy?"

ANSWER. We see no reason why not--in theory. Experience shows that such an approach is filled with pitfalls. The track record for managers in this regard is not good. The quarter townships were utilized for ease of calculation since most data on forest condition are gathered and stored by ownership, not drainage. However, it is essential that whatever the record-keeping unit is determined to be is maintained in perpetuity. There are too many instances of boundaries established for record-keeping purposes being changed to give appearance of adherence to a "habitat rule." The record-keeping areas cannot be too large to mask effects of not meeting the 50-11-40 rule. It may take some sensitivity analysis to determine an appropriate size for an analysis unit.

95. QUESTION. "What are the expectations for private lands? [re: 50-11-40 rule]."

ANSWER. The provisions of the 50-11-40 rule, as with all aspects of the ISC Plan, apply only to Federal ownerships. The 50-11-40 rule is recommended to private landowners as a means of strengthening the overall strategy. There is no requirement in the ISC strategy that applies to private lands--not within or between HCAs. Applying the committee's conservation plan also to private lands increases the likelihood of successfully providing for viable populations of northern spotted owls over the long run, because such lands help link otherwise isolated or "filtered" populations. However, our plan was constructed to apply optionally, no mandatorally, to private lands. Please see the answer to question number 74.

96. QUESTION. "The conservation plan recommendations assume a static universe, but if it is implemented, there will likely be changes in land use

patterns and ownership. Has there been any consideration of how these changes will affect markets, products and the owl itself?"

ANSWER. The FS and BLM have prepared a report as to the probable economic and social consequences of implementing the proposed strategy. The ISC made no such analyses. Other groups such as State government, the timber industry, environmental groups, and various consultants are also preparing analyses concerning markets, forest products, etc. You will undoubtedly have an array of highly variable answers from these studies from which you may choose answers. Each of these studies make different assumptions about markets, landowner intent under various scenarios, land-ownership, etc. These are answers to suit all tastes. The key to interpretation of these analyses are the assumptions made. It is as important to evaluate the assumptions as it is to evaluate the results of the analyses. We did not assume a "static universe" so far as habitat was concerned and specifically mentioned production and recruitment of habitat and shifts in landowner objectives related to wood price, law, etc.

Questions Submitted by Senator Mark Hatfield of Behalf of
The Northwest Forest Industries Council

97. QUESTION. "What was the ISC's intent in including several hundred thousand acres of private forest land in Oregon within the proposed HCAs?"

ANSWER. The boundaries around the HCAs in Oregon were drawn around areas large enough to support 20 or more pairs of spotted owls where it was possible to do so. To simplify the maps, private lands were included because ownership patterns would cause boundaries following only Federal land perimeters to be disjunct and confusing. The strategy was developed to apply only on Federal ownerships (and on state lands if the states chose to participate). Suggestions are offered to private landholders of how they might use silvicultural techniques and forestry practices (50-11-40 rule) that might lessen the effects of logging on spotted owl habitat inside the HCAs. The ISC report made no requirements on private lands--not within and not between HCAs. Please see the answers to questions 95 and 74.

98. QUESTION. "Very little 'old-growth' timber (by any definition) remains on private forest land in Oregon. If, in fact, the northern spotted owl is dependent on such areas for essential habitat, why are managed, second-growth forests included within the proposed Habitat Conservation Areas?"

ANSWER. We do not understand the connection between the statement made in the first sentence and the question in the second sentence. No private lands, even those within HCA boundaries, are required to change management as part of the ISC recommendations (see answers to questions 97, 95, and 74). Where federal lands presently occupied by second-growth forests are included in HCAs, it is with the intent that these forests will mature to become suitable habitat for reproducing pairs of owls. To succeed over the long-term (100 years), suitable habitat must be replaced at an equal or greater rate than it is lost. Therefore, it is essential to recruit habitat from younger stands maturing into suitable habitat and to account for that in long-range plans. There is no dependence on such habitat to support owls in suitable habitat in the near term.

99. QUESTION. "A massive northern spotted owl inventory-survey effort is currently being conducted on private forest land--again, primarily managed, second-growth stands--throughout northern California, western Oregon, and western Washington. What level of information or evidence would this effort have to produce to convince the ISC to reexamine the fundamental assumption in the report: that large blocks of forest land must be placed totally off-limits to all management activities to ensure the survival of the owl."

ANSWER. Please see the answer to question number 77.

100. QUESTION. "The intent and scope of the recommended "50-11-40" management prescription for forest land outside Habitat Conservation Areas is not clear. Would this standard apply to all forest land outside HCA's? Or would it apply only to corridor-type areas between HCA's? In either case, does the ISC suggest that this standard apply to private as well as public forest land?"

ANSWER. The standard applies to all forested land on federal land (FS, BLM, NPS) between HCAs and within the occupied range of the owl. Dispersing owls do not disperse in straight lines so far as is known. The 50-11-40 rule does not apply to private land. However, some of those lands will contribute to owl habitat by having trees 11 inches dbh with 40 per cent or more canopy closure at some time during their rotation. Please see answers to questions 98, 97, 95, and 74.

Questions Submitted by Senator Mark Hatfield on Behalf of The Northwest Forest Resource Council

101. QUESTION. "It is my understanding that your conservation strategy will ensure that spotted owls are maintained, well distributed throughout its range. Am I correct that the 'well distributed requirement' poses a greater and more demanding management burden on the Forest Service than just avoiding the extinction of native wildlife species?"

ANSWER. We do not characterize a management requirement to achieve compliance with the law as a "burden"--it is merely one such requirement among many. Species with habitat in constricted or poorly distributed patterns entail risk of decline and extinction. "Just avoiding extinction" has little meaning in the long run in that "just avoiding extinction" has a high probability of resulting in extinction during a catastrophe, prolonged adverse weather, or some other detrimental set of circumstances. Further, it was our intent to obey extant law. The NFMA (rather the regulations issued pursuant thereto) requires the Forest Service to maintain viable populations well-distributed within the planning area. The National Forests contain the vast majority of spotted owl habitat.

102. QUESTION. "Would it be possible to develop a plan to avoid the extinction of the spotted owl without maintaining a viable population, well distributed throughout its range?"

ANSWER. We interpreted our charge, and the concepts of "well distributed" and "viable," as meaning that the species should be maintained in its native environment and have the opportunity to interact with other species and to adapt and evolve. Anything less pulls the species out of context of its environment and, by definition, creates a nonviable population. A species is effectively and ecologically extinct when it no longer functions in the environments in which it evolved. Please see the answer to question number 101. It is not possible to reduce the occupied range on National Forests without violation of the regulations issued pursuant to the NFMA. We suspect that compliance with the intent of the ESA precludes purposeful local extinctions intimated by your question. Perhaps it is best to inquire of legal counsel of the Fish and Wildlife Service. We are scientists and biologists and do not consider ourselves expert in law.

103. QUESTION. "Habitat conservation areas are recommended to be large enough to hold 20 pairs of owls. This recommendation is based on studies of birds on islands off the British coast and the coast of California. Are there differences between birds living on islands and birds living in the forests of the Pacific Northwest?"

ANSWER. Please see the answer to question number 28. Some aspects of animal biology tend to be more consistent from species to species than other aspects. This is part of the reason why medical researchers have been able to use a variety of nonhuman animals in studies that later have significant applications in human health. Of course, the best "test" comes when the actual target population provides the data. When seeking to determine a number of pairs of spotted owls that could interact in a sub-population with a reasonable expectation of being intact in, 75-100 years, we could not use information based on studies of spotted owls. That information did not exist. But the components of population ecology that would determine what that number of pairs might be is likely more similar in other bird species than, say, in lizards or small mammals. Consequently, we sought the best available information most comparable to spotted owls. Such came from other bird species. When possible, we sought information from relatively large-bodied, nonmigratory birds (see explanation in Appendix O, pp 288 & 289, of our report). These are all species with similar traits that would be important in determining a relatively stable population size. For example, all are capable of flight; all have annual reproductive cycles; all have similar potential reproductive rates; all tend to disperse from natal areas to seek mates elsewhere; all communicate vocally which is important in locating mates, and even in locating general areas in which to seek mates; and probably all have floaters as part of their population when at carrying capacity of the habitat The general levels of similarity among species in these attributes lead us to believe that a subpopulation on the order of 20 pairs would tend to be approximately as stable for all relatively large-bodied, nonmigratory bird species. Consequently, inferences from one species are likely to be generally the case for all others, regardless of where they occur or what general habitat type to which they are adapted.

Most of the bird species involved, especially in the British island examples, are strong fliers, so the relatively short water gaps (mean distance = 4.4 miles) between islands and mainland are probably not extreme barriers to their dispersal. Similarly, spotted owls can probably disperse relatively successfully through a forest with reasonably continuous distribution of relatively large trees. However, the dispersal distances required by the separation between HCAs proposed in our strategy are greater than those between the British islands and the mainland. Consequently, the minimum size of a relatively stable population of spotted owls would probably be somewhat larger than indicated by the British island study. On the other hand, it's probably somewhat smaller than indicated by the California Channel Island study. We believe our recommendations concerning the number of pairs needed in HCAs are consistent with these interpretations.

104. QUESTION. "On February 6, 1990, committee member Dr. Jared Verner wrote a professor in Finland asking for information about birds on islands in the Baltic Sea which the professor had studied. Dr. Verner wrote: "Our thoughts are converging on about 20 pairs (for HCAs), but we lack good empirical evidence from birds to help us make that decision or to defend it in a court of law."

ANSWER. Please see the answer to question number 23.

105. QUESTION. "Do you agree with Dr. Verner that as of February 6, 1990, your committee lacked good empirical evidence to support your decision on the size of HCAs?"

ANSWER. Please see the answer to question number 23.

106. QUESTION. "Did you receive any significant information after February 6, 1990?"

ANSWER. Please see the answer to question number 23. Yes. Dr. Verner received a short note from Dr. Haila in April, after our final report was submitted. It contained no significant information, just a statement from Dr. Haila that none of his data would apply to our situation.

107. QUESTION. "Would you please explain why your committee first decided how large the HCAs should be and then began looking for empirical evidence to support your decision?"

ANSWER. Please see the answer to question number 23.

108. QUESTION. "Would you also explain why your committee felt you had to collect information to defend your plan in a court of law?"

ANSWER. Please see the answer to question number 23.

109. QUESTION. "Managed forest in northern California contains spotted owls. Did your report consider that managed forests in Oregon can also contain spotted owls?"

ANSWER. Yes, we did consider this. We knew, from earlier work by Drs. Forsman, Meslow, Irwin, and others, that there were some spotted owls on state and private lands in Oregon and Washington. However, the low densities reported from managed stands in both states led us to believe that owls on private lands, in both states, comprise a small portion of the population. Furthermore, we have no assurances that private landowners in either state will protect known owl pairs, or manage their lands to provide good owl habitat. That being the case, we did rely on private lands in Oregon and Washington as a source of habitat for spotted owls in the future. Please see answers to questions 31 and 77.

110. QUESTION. "It appears as though your committee relied on Dr. Barry Noon's computer simulation model of clusters of spotted owl territories as the tool to select the correct size of HCAs. Is that correct?"

ANSWER. No, the computer model was used to test various hypotheses about the size of HCAs and their likelihood to provide for long-term occupancy by pairs of owls. The original set of hypotheses concerning HCA size was based on: 1) population studies of other wildlife species occupying patchy environments; 2) constraints on HCA size set by the forested landscape in Washington, Oregon and California; and 3) the distribution of current and potential suitable owl habitat.

111. QUESTION. "Has Dr. Noon's model been published for peer review?"

ANSWER. The models should not be referred to as Dr. Noon's models. Two models were used to test aspects of the conservation strategy. Dr. Noon was not the primary researcher in the development of either model. For the individual territory model, Dr. Roland Lamberson (Dept. Mathematics, Humboldt State University) and Dr. Robert McKelvey (Dept. Mathematics, University of Montana) were the primary developers. This model has not been published. It has been presented, however, at several scientific meetings including the annual meeting of the American Institute of Biological Sciences (AIBS), and the annual meeting of the Resource Modeling Association.

The cluster model was developed primarily by Dr. Roland Lamberson. It has not been published.

112. QUESTION. "Did Dr. Noon actually develop the model during deliberations of your committee?"

ANSWER. The individual territory model was developed prior to the first convening of the ISC. A prototype version of the cluster model was developed prior to the first convening of the ISC. During our period of deliberation (Oct - Mar), extensive, additional development and refinement of the cluster model occurred.

113. QUESTION. "Had anyone outside your committee ever seen or reviewed Dr. Noon's model before you released your report?"

ANSWER. Yes. The models were reviewed by Drs. Russell Lande (University of Chicago), John Wiens (Colorado State University), Michael Gilpin (University of California), and Larry Harris (University of Florida). Dr. Dave Anderson (U.S. Fish and Wildlife Service), also received drafts of Appendix N which contained the models for his review and evaluation. In addition, the ISC had informal meetings with Dr. Mark Boyce (University of Wyoming) and his postdoctoral associate, Dr. Joe Meyer, at which the details of the model were discussed. The individual territory model is similar to that developed by Dr. Russell Lande. This model has been peer reviewed and published. The cluster model is similar to a model developed by Mr. Dan Doak (University of Washington). This model was peer reviewed and published.

114. QUESTION. "Has Dr. Noon's model ever been tested or verified in the real world in any way?"

ANSWER. The model has not yet been validated in the "real world." However, the model makes a number of predictions, some of which can be tested over relatively short time periods (3-5 years). Testing of these predictions is largely contingent upon implementation of the conservation strategy suggested by ISC. Testing of model predictions was viewed by the ISC as an integral part of the Plan implementation, and was framed in the context of adaptive management. The models have, however, been informally tested. That is, we have asked whether model output is: 1) consistent with our understanding of spotted owl biology and life history; and 2) consistent with insights gained from the study of the population dynamics of other wildlife species. In general, validation of models that project the population statistics of long-lived organisms are difficult. One reason is that consequences of current management decisions on species' population status are often not expressed until well into the future. That is, there are substantial time lags in the response of the population to significant changes in its survival and fecundity (birth and death) rates. The existence of time lags is one of the main reasons that population modeling is a necessary component of conservation planning. Please keep in mind that no decisions in the ISC strategy were based on models alone. Each decision point (hypothesis) was tested by applicable theory, empirical data, and a model. The use of models was only one tool used at each decision point.

115. QUESTION. "Do you have any way to determine whether Dr. Noon's model is an accurate representation of what happens to spotted owls of the Pacific Northwest?"

ANSWER. The structure of the models was based exclusively on our current understanding of the biology and life history of the northern spotted owl. The parameterization (that is, the specific values assigned to the variables) of the models was based primarily on estimates of the vital rates (survival and fecundity values) from northern California. If we used estimates of adult owl survival from the Roseburg District of BLM lands in Oregon for an example, all of our population simulations showed the owl going extinct. We were only able to demonstrate a nonzero population equilibrium based on the demographic data from the California study area. Models were not used in isolation. They were used in conjunction with theory, empirical data, and common sense. Empirical data show strong association between owls and mature and old-growth forests. Empirical data show owl abandonment of areas where suitable habitat is removed. Empirical data reveal that 60-70 percent of what was, probably, suitable habitat has been lost over the past 100 years. Empirical data show that at least 70,000 acres of suitable habitat has been lost per year through by logging on federal lands alone. Demographic studies show population declines. The general pattern is clear, as documented in the ISC report and the report of the Fish and Wildlife Service's team that prepared the 1990 Status Review - Northern Spotted Owl. The subspecies has now been officially listed as "threatened" throughout its range. Application of common sense and logic leads to the same conclusion. The models were used to determine if the empirical evidence, common sense and theory made sense when rigorously examined in combination. They did.

116. QUESTION. "Does Dr. Noon's model ignore all of the several million acres of permanently protected spotted owl habitat outside of the HCAs?"

ANSWER. All known clusters of owl pairs within wilderness areas and parks were included in HCAs, as a first step in order to minimize the effect of the ISC strategy on timber supply. The ISC did not ignore these areas. Such statements confuse acres set aside from timber harvest, for whatever reason, with acres of suitable owl habitat. The amount of owl habitat in parks and wilderness is some fraction of the forested acres within those areas. In contrast, data suggest that habitat within reserved lands on national forests (including wilderness areas) is not, on average, as suitable for spotted owls as habitat in nonreserved lands suitable for timber harvest (see appendix K). As a result, no large population centers were assumed in our simulation models to exist outside HCAs. Note though, that as much as 40 percent of the acreage in HCAs was already reserved from timber harvest for other purposes, further casting doubt on the assumption of "several million acres of . . . owl habitat." It is sometimes intimated that all areas set aside from timber harvest in Wilderness and National Parks is forested. That is incorrect. It is sometimes further intimated that all forested areas in Parks and Wilderness are in old growth (i.e., are owl habitat). That is also incorrect.

117. QUESTION. "I understand that your committee used the Delphi Approach in making decisions about this plan. Am I correct that the Delphi approach is a

process of using professional judgment to make a decision where there is no objective scientific basis to make the decision?"

ANSWER. Please see the answer to question number 25.

118. QUESTION. "It seems to me that there is considerable room for different people to reach different conclusions about the correct decision under the Delphi Approach. Would you agree that the distance between HCAs is an issue where reasonable responsible persons could easily reach different decisions through the use of judgment?"

ANSWER. Please see answers to questions 25 and 84. The magnitude of the differences between conclusions of different groups is a critical matter. Based on lengthy discussions of this matter among all of our Committee and advisors, we concluded that the dispersal distance between large HCAs (20+ pairs) should be within the observed dispersal distance of at least two-thirds of all radio-tagged juveniles. This recommendation was included in our draft report, which was reviewed by five technical experts selected by professional societies. They were aware that this decision was based on a Delphi approach (best collective judgment of experts in the field considering what empirical data was available). Only one reviewer, Dr. John Wiens, questioned this process. In follow-up conversations with Dr. Wiens, he responded that he could suggest no better method for arriving at a decision on this matter and, furthermore, that he was satisfied with the "two-thirds" guideline that we adopted.

Our two-thirds guideline obviously struck a balance between opposing extremes, a balance that our Committee believed would produce a high likelihood of long-term viability of the owl. Furthermore, if this same question were addressed by other teams of scientists with our collective level of knowledge about general animal ecology, wildlife biology, the vital role of dispersal in population dynamics, and, most importantly, spotted owl biology and population dynamics, we believe they would settle on a guideline the same as or lesser distances between HCAs that we proposed in our strategy.

Please note that the Delphi approach was used only once in the development of the ISC strategy. That was in determining the distance between HCAs of 20 or more pairs.

119. QUESTION. "In addition to the size of HCAs, the distance between HCAs is a critical factor in your report. Is the distance between HCAs an area where different people can reach different conclusions?"

ANSWER. Please see the answers to question numbers 25, 84, and 118.

120. QUESTION. "How can you scientifically verify whether the distance between HCAs called for in your plan is in fact required for the protection of the spotted owl?"

ANSWER. Our conservation strategy is a hypothesis (or, more correctly, a set of hypotheses) requiring testing (monitoring) and evaluation. All hypotheses included in the strategy were based on the best information we could find--both theory and empirical data, together with all appropriate analyses, extensive evaluations and discussions, testing through modeling and peer review. The recommended distance between HCAs is one such hypothesis that can be evaluated through continued monitoring and research. This procedure is fully in accord with the scientific method, which typically produces uncertain results that require further study. Please see the answer to question number 16.

121. QUESTION. "Can you please explain why you relied on Dr. Noon's model even though the model relies on data on juvenile spotted owl mortality from studies using transmitters?"

ANSWER. No, repeat no, parameter estimates used in our population simulation models were based on data radio-transmitted from owls. All such radio-transmitted information available from owls was excluded from the analysis performed. This is clearly spelled out in the report.

122. QUESTION. "Can you please also explain why your conservation strategy bases the distance between HCAs on data from studies using transmitters?"

ANSWER. Bird movement can be determined from two sources--banding studies and radio telemetry. In preparing our report, acknowledging the potential effect of transmitters on owls, we tested for a relation between the number of days that an owl carried a transmitter and dispersal distance. No relation was found. In fact, the birds with transmitters, on average, dispersed substantially farther than the banded birds. No evidence exists, therefore, to support the contention that the HCAs should be farther apart though it could be argued that they should be closer together based on the banding data.

If there is an error in judgement concerning distances between HCAs on the part of the ISC, it is that perhaps we should have used the data from banding studies (so there would be no question about effect of transmitters) and placed the HCAs closer together. This, of course, would increase the number of HCAs and the negative effect on the annual sale quantity of timber inherent in placing more land in HCA status.

However, given that we could find no relation between the dispersal distance and the number of days that birds carried a transmitter, we decided to use data from birds equipped with transmitters as opposed to, or in addition to, data from banding studies. We would feel much more secure in the chances for continued viability of the spotted owl if the HCAs were closer together.

123. QUESTION. "Are you willing to acknowledge the possibility that the data on maximum dispersal distance by juvenile spotted owls from studies using transmitters is flawed, and that spotted owls without transmitters may be able to travel considerably greater distances to find suitable habitat?"

ANSWER. Please see the answers to questions 16 and 32. If one chooses to consider the data from transmitted owls flawed, it is equally or perhaps more probable that the average distance traveled could be less than that estimated from radio-equipped birds. As the subspecies has now been listed as "threatened," and the ISC strategy allows for possible loss of perhaps 50 percent of the extant population; it may be wise to use the banding data or an assumption of overestimate to assure a more conservative approach. Again, we would feel more secure in assuring long term viability for the owl if HCAs were closer together.

124. QUESTION. "Would you admit that if this possibility were true, the HCAs could be considerably farther apart than is proposed in your report?"

ANSWER. Please see answers to questions 16 and 32 We repeat, if the data from transmitted birds is flawed, it is equally or more likely that the HCAs are too far apart. As common sense reveals that having HCAs closer together increases chances of successful dispersal and farther apart increases risk and considering that the subspecies is now listed as threatened, it may be best to decrease the distance.

125. QUESTION. "Do I understand that your plan is a single integrated proposal, and every element is required to be adopted for you to have confidence that it will succeed?"

ANSWER. It depends on what the adjustments to the proposed strategy were. There could be alterations that would enhance chances of success and some that would decrease those chances. The answer, in any case, is not "black-and-white." The changes would be incremental in terms of evaluating the probability of success over a specified time period. It would seem logical and in keeping with the intent of NFMA and ESA to compensate for any increased risk inherent in altering parts of the plan by strengthening other parts. Such possibilities include increasing HCA size or number, moving HCAs closer together, or improving habitat between HCAs. Please see answers to questions 9, 22, 64, 65, 69, and 82.

126. QUESTION. "If you came to the conclusion that substantial parts of your plan could not legally or practically be implemented, what recommendation would you give as to whether the balance of the plan should be implemented?"

ANSWER. See answer to question number 82. There must, under the ESA, be a recovery plan. We think it highly unlikely that any scientifically credible plan can be devised that is not built on the principles detailed in the ISC strategy. If that is so, the argument devolves on sizes of HCAs, distances between HCAs, and habitat between HCAs. But, there is another factor--the number of owl pairs provided for over time. The ISC strategy provides habitat for approximately 1,795 pairs in HCAs--probably less than 50% of the number of pairs provided for.

127. QUESTION. "Am I correct that your committee found that the spotted owl surveys conducted in 1989 by private land owners on managed second-growth forests in California provided you with important information which helped the committee define the nature of suitable spotted owl habitat in northern California?"

ANSWER. Yes.

128. QUESTION. "Will information from the surveys now being conducted on one million acres of state and private second-growth land be important to defining the nature of suitable spotted owl habitat in Oregon?"

ANSWER. We have not seen the information. We hope so. It should be understood, however, that simply describing vegetation conditions where an owl has been located does not be itself provide a sufficient definition of suitable habitat. It must also be known what proportion of the population of owls selects each vegetation condition. The more consistently selected habitats are likely those providing owls better resources, and in which owl pairs are more fit for survival and reproduction. Simply searching a particular type of habitat, finding an individual organism there, and analyzing vegetation conditions there, is not a scientific method of determining suitable habitat. We expect the studies you have cited to follow strict scientific method; then, they will provide useful information to expand our understanding of spotted owl habitats.

129. QUESTION. "Did your report consider options such as transplantation and breeding in captivity. If so, why did you fail to discuss it in your report?"

ANSWER. We did discuss such options in deliberations but not in the report. Such options as these are usually "last resorts" to be employed when no other options exist. At that point the species in question usually moves to "endangered" status. Employment of such techniques is prima facie evidence that there is a breakdown in viability of the population that must be overcome by such approaches. There is no place in the current range that such measures are presently required. The population on the Olympic Peninsula, if it is indeed demographically isolated, may be an exception if genetic problems develop. However, transplanting owls might be useful for avoiding genetic problems, but would almost certainly not stave off a population decline if the problem is demographic isolation of the population and a poor or zero immigration rate into the population from other populations. It was our opinion that transplantation and breeding in captivity to allow actions that would make existing habitats "nonviable" to support owls would be in direct conflict with the objectives of the conservation strategy, the mandates and intent of NFMA and ESA now that the species is identified as "threatened."

130. QUESTION. "Do spotted owls use only old-growth throughout their home range? Why don't the HCAs allow for forest management activities?"

ANSWER. These are two very different questions. We answer one at a time. Typically, they do not use only old growth. Studies of habitat use have shown that they select older forest types for foraging, but also use younger forest types at least occasionally. In general, use is positively correlated with stand development, with old, multi-layered stands receiving the most use, and clearcuts and nonforest types the least use. This pattern of use indicates that in most forest types in Oregon, Washington, and northern California, old forest area is very clearly the preferred habitat, with younger stands being much less used. In the Douglas-fir/western hemlock area, stands younger than about 40 years receive very little use, indicating that they are poor habitat for spotted owls.

In answer to the second question, the function of the HCAs is to provide a network of large blocks of good habitat for owls until such time as it can be demonstrated that owls can be said to exist in viable numbers and conditions in the managed forest landscape. Because extant populations will be greatly reduced (perhaps by 50 percent or more) by cutting, we felt it mandatory to ensure that the quality of the habitat retained within HCAs should be as high as possible. Data from telemetry studies indicate that unmanaged old forest are the best habitat for spotted owls, so we recommended that existing old forests in HCAs should be left unmanaged, and that previously harvested stands be allowed to develop in an unmanaged condition. Our plan does not rule out management activities that do not significantly reduce the amount of habitat.

We discourage, but do not rule out, roadbuilding. We also would not be adverse to soil stabilization projects, stream improvement projects and the like, that do not adversely affect the forest cover. Please see the answers to questions 5, 10, and 18.

131. QUESTION. "Why don't the HCAs allow for forest management activities?"

ANSWER. Please see the answer to question 130. The intent of the HCAs is to provide habitat for northern spotted owls until such time as there is reasonable certainty that forest practices exist to maintain and produce equally good habitat. At that time, such management can be applied in HCAs. Proven technology to achieve that end does not currently exist. Forest management is not prohibited, but only actions proven to enhance, protect or produce suitable habitat are allowed. Ample opportunity exists outside HCAs to test and prove such technology. Please see the answers to questions 5, 10, and 18.

132. QUESTION. "What data did your committee rely on in concluding that the current Forest Service spotted owl management plan, based on small spotted owl habitat areas, was not working successfully to protect the spotted owl given the fact that it hasn't been implemented yet?"

ANSWER. Please see answers to questions number 13 and 60.

133. QUESTION. "Do you have an accurate inventory of how many spotted owls exist today in Oregon, Washington and northern California?"

ANSWER. No. A complete inventory or census of spotted owls throughout its range does not exist. Further, it is unlikely that such a complete inventory will ever exist since costs and logistics of such an undertaking are prohibitive. Likewise, no complete inventory exists for any wildlife species in the United States where numbers are more than several thousand and where the range of species is broad. To make a point, there is no complete inventory of trees either. Population estimates gained through sampling are the common criteria. To imply that an absence of "a complete inventory" is an uncommon weakness is inaccurate.

Questions Submitted by Senator Mark Hatfield on Behalf of The Bureau of Water Works at the City of Portland, Oregon

134. QUESTION. "Will it be possible to construct a new dam and create a new reservoir in this habitat conservation area?"

ANSWER. Perhaps. We assume that question numbers 134-137 apply to the HCA that encompasses the Bull Run Watershed. See answer to question number 137.

135. QUESTION. "Will it be possible to reduce fire danger, and therefore the threat to high quality water, by conducting blowdown salvage in this habitat conservation area?"

ANSWER. Perhaps. See answer to question number 137.

136. QUESTION. "Will it be possible to conduct stream channel rehabilitation or landslide rehabilitation in this habitat conservation area?"

ANSWER. Yes. See answer to question number 137.

137. QUESTION. "If the answer to one or more of these questions is "not under the present concept of an HCA" or "maybe", then what kind of guidelines can be written for creation or management of this HCA that will ensure that we can both protect the owl habitat in the Bull Run AND provide for a continued supply of high quality water? From these questions, you can see that we would like to protect owl habitat and at the same time, retain the ability to carry out limited land management activities necessary for water quality protection and continued water supply for domestic use."

ANSWER. ISC designated the area as an HCA because of its strategic location in an attempt to enhance habitat connectivity across the Columbia River and because timber management was already constrained by the watershed classification which would dampen the effect on timber supply. The area includes large amounts of suitable owl habitat, and such designation would help reduce the loss of other land that might be so designated from the timber base. ISC assumed that the Forest Service and the City of Portland could and would design a set of standards and guidelines for management of the watershed that can protect owl habitat and provide a supply of high quality water. We reiterate--ISC recognized that the primary reason for the classification of Bull Run Watershed is providing high quality water and that a special plan would be required for the area.

Questions Submitted by Senator Mark Hatfield on Behalf of
Governor Neil Goldschmidt of Oregon

138. QUESTION. "If we accept, as a fact, that the spotted owl is in some peril as a species, are there other strategies that would insure the owl's survival? For example, could we elected to concentrate our protective efforts in a lesser geographical area where owl populations are relatively healthy rather than throughout its range and still meet the survival objective? Would such an alternative result in less total acreage allocation to owls?"

ANSWER. Please see the answer to question number 66.

139. QUESTION. "In northwest Oregon and southwest Washington, your committee's report suggests protecting some second-growth areas that we understand are not owl habitat today. I believe your committee's view is that these areas will eventually become owl habitat in the future. Given the possibility of natural events such as fires, etc., have you looked at the statistical probability that these areas can be expected to become owl habitat (i.e., old-growth)?"

ANSWER. No, we conducted no statistical analysis of the effects of catastrophic events such as fire on the future structure and composition of second growth. This was because no studies to date have quantified the frequency, location, intensity, and effects of catastrophes and their effects on second growth. Studies currently underway will analyze past events and management activities in managed stands, and will begin to provide such knowledge. This is an area that requires further study and monitoring, regardless of the assumptions made in the owl plan. The statistical probabilities would vary from stand to stand for a variety. It should, however, be just as likely that such a stand could attain 100+ years of age as any stand managed for timber. We make no assumption that the stand would ever be "old growth." We assume that it would, in time, become suitable habitat for owls.

140. QUESTION. "Is restoring the owls to areas where they do not exist today an essential part of the survival strategy or were you simply trying to meet the mandates of the ESA to restore it throughout its range?"

ANSWER. Please see the answer to question number 69.

141. QUESTION. "In your opinion, could extensive owl research definitively describe the so-called "structure" that seems to make old-growth forest the owl's preferred habitat? If so, how long would it take to determine if there is a reasonable chance that modified forest management practices might replicate that "structure" in second growth?"

ANSWER. Yes. Such research is specifically suggested in Appendixes R and S of the ISC report. How long it would take to determine if modified forest management practice's might replicate that structure depends, to some extent, on resources available to conduct the experiments. We assume, for purposes of answering the questions, that adequate resources are available. Obviously, if the studies start with very young second-growth stands, it will take 60-100 years to produce an answer. If studies begin with stands 40-60 years of age, it might be done in 20-50 years and so on. These estimates are very loose.

Most observations of owls in second growth (outside of northern California) indicate that they are associated with nesting areas of residual older trees surrounded by 40-80 year old stands. Such may be difficult to produce in a short period. This is why we recommended "category 4 HCAs" of 80 acres of suitable habitat be left when areas are logged that contain nesting owl. This may make it possible for the area to support owls again in a much shorter time.

Another approach is to determine if presently suitable habitat can be selectively logged and still remain suitable habitat. That can be done in a much shorter period of 5-20 years. We are very unsure of these answers and would feel more comfortable working with silviculturists to design appropriate study approaches. Such research planning is being, or will shortly be, considered and is encouraged as part of the adaptive management section of the ISC report.

142. QUESTION. "The report suggests only one option for ensuring survival of the northern spotted owl--the report's recommendation for HCAs and management of the intervening lands. Yet, we have heard that the Scientific Committee considered at least five other approaches including the dedication of all forest lands to "long rotations." The report is silent on these other options and why they were rejected. What comprehensive options for ensuring survival of the northern spotted owl, other than the report's recommendations, were seriously considered by the scientific committee? Why were these other options rejected?"

ANSWER. Please see the answer to question number 68. Each alternative considered would either not have worked over a 100-year period or be better for the owl but at an even higher cost in terms of timber supply. Given the uproar that erupted on the impact on timber supply of the ISC report (which we anticipated), it does not seem likely that any strategy that had even higher costs would be seriously considered in the political process.

143. QUESTION. "It is difficult to understand the Thomas Report's proposal for the management of lands between the HCAs described in the "Management of Land Within the Forest Matrix" in Appendix R: Standards and Guidelines. This section, at times, appears to have been added late in the process and does not seem as well-documented or described as the HCA part of the proposal.

The lead paragraph in the "Forest Matrix" section states,

"Connectivity and retention of habitat characteristics for future breeding sites are important aspects of the conservation strategy in the long- and short-terms. To assure that adequate dispersal habitat and options to apply adaptive management are available in the forest matrix, the following prescriptions are required[.]"

For both reserved lands and lands unsuited for timber production, the Thomas report states, "No change will be made in the present direction of management for all forest lands in this category" (page 347).

For lands "suited for timber production", the Thomas report states,

". . .retain existing considerations for other resource values such as wildlife trees and downed-wood retention" (page 348).

In the report's endorsement of federal forest plans, precisely what "present direction of management" and "existing considerations" are you referencing:

For the national forests? All westside national forests in Oregon have finished draft forest plans. Only two (Siuslaw and Siskiyou) have approved final forest plans. In theory, the four other westside forests (Mt. Hood, Willamette, Umpqua, Rogue River) operate under their Timber Resource Plans or Land Use Plans approved in the mid-1970s until their final forest plans are approved.

ANSWER. Please see the answer to question number 148.

144. QUESTION. "Does 'present direction' and 'existing considerations' refer to (1) the forest resource plans approved in the mid-1970's; (2) the current draft forest plans; or (3) the proposed direction in the final forest plans? There is a major difference in land allocation between the plans of the 1970's

and the draft forest plans, but there are also significant differences between the draft forest plans and the final forest plans in some cases. For example, riparian areas on the Willamette NF were available for timber harvest in the draft plan but essentially unavailable for harvest in the proposed final plan. Was it your intent to freeze the land allocation on all national forests in the form of the final forest plans as you know them? As an example, the proposed final forest plan on the Willamette NF has approximately 50 percent of the forested land available for timber harvest while the proposed final forest plan on the Umpqua NF has approximately 70 percent of the forested land available for timber harvest. What evaluation criteria led you to endorse the land allocation in these plans?"

ANSWER. Please see the answer to question number 148.

145. QUESTION. "Do your statements endorsing "present direction" and "existing considerations" also apply to BLM lands? The BLM has not yet made public their new land and resource management plans. Did you have access to their upcoming draft plans now being prepared? Do the statements refer to the existing plans finished in the mid-1980's? The BLM plans allocate a much higher percentage of their forested land to intensive timber production than does the Forest Service (over 85 percent outside of the BLM Medford District compared to an average of 60 percent for the Forest Service). If plans that

have the vast majority of forest land in timber production are acceptable on BLM lands, why aren't they acceptable on Forest Service lands?"

ANSWER. The reference to BLM lands would apply to the mid-1980 plans. Once again, these allocations were intended to complement the connectivity supplied by the 50-11-40 rule. They are important to enhancing dispersal of owls because of their presence at whatever level. If, through monitoring, it is determined what level of reserve may work best within the 50-11-40 rule applied to BLM lands, then adjustment may be possible.

The situation on BLM lands is not good and getting rapidly worse so far as dispersal habitat is concerned. We consider the BLM lands, already, to be the weak link in the proposed strategy. But for the short-term, this may be the best that can be hoped for. Past cutting practices based on the higher levels of dedication of those lands (compared to National Forests) to intensive timber production, distribution of those cuts, some relatively short rotations, and the practices on private lands within the "checkerboard" have foreclosed many options for management of spotted owls over the short term. This does not mean that this situation is or should be acceptable on lands where conditions are better and options greater, i.e., Forest Service lands. Such would be acceptance of the lowest common denominator and not in keeping with a viable conservation strategy. The ISC is very concerned that the strategy put forward by BLM as the "Jameson Plan" is not detailed enough for ISC or the Fish and Wildlife Service to determine the effect of over two years of continued cutting of suitable owl habitat on the already limited options on BLM lands. It is exceedingly difficult to understand how BLM can refrain from cutting in HCAs, maintain all currently dedicated SOHAs, follow the 50-11-40 rule where possible, and save more jobs, etc. than would be achieved under full adoption of the ISC strategy. It appears that what BLM proposes to do is follow the ISC strategy--but, to continue to hold the HCAs in the timber base for two years. It is difficult to see how this can be achieved except by a significant departure from sustained yield forestry. The exact consequences are impossible to determine from the information made available to the ISC. If departure is the strategy for the next two years in order to hold the cut at a higher level than would be true if the HCAs are removed from the timber base, adjustment to the cut levels in two years, if the ISC strategy is then accepted, will be even more severe. This should be explored thoroughly in terms of consequences before the "Jameson Plan" is accepted. This approach may not be nearly so viable or "better" as it appears upon superficial examination.

146. QUESTION. "The Thomas report recommends that lands declared unsuitable for timber production under the federal forest plans not be put back into the timber base. Does this stipulation cover all types of lands that fall into this category including the existing SOHA system, stream corridors, "backcountry areas", and intensive recreation areas? What criteria did you use in deciding which, and how much, forested land outside of the HCAs need be declared "unsuitable" for timber production for your owl conservation plan? As mentioned above, BLM has a much lower level of withdrawal than the Forest Service? How can the policies of both agencies meet the requirement here?"

ANSWER. This stipulation covered all types of areas as, for the most part, they provide habitat islands of more mature forests that may serve as stop-over points for dispersing owls. These areas are intended to complement the lands meeting the 50-11-40 rule which was designed to facilitate dispersal. There was no intent to prescribe what amount of such allocations should occur in the matrix and the ISC suggested no such allocations. The allocations already existed. Monitoring may demonstrate that dispersal capability of owls on Forest Service land is greater than BLM or vice versa. If so, modifications in management of dispersal habitat may be prudent and justified. It should be noted that such allocated lands that have 11 inch diameter trees with 40 percent canopy closure contribute toward the 50 percent of the forested land required to meet that standard. The existing SOHA system is, in general, released for logging. Please see the answer to question 74.

147. QUESTION. "The report states that 'many management practices, including those associated with certain timber harvest methods, provide habitat attributes conducive to spotted owl dispersal. Examples include visual corridors, riparian corridors, and streamside-management zones, all of which contain possible stopover spots. These habitat areas tend to be linear in configuration.' The report endorse retention of these allocations in the federal plans. What characteristics do these lands have (rotation length, stand structure) that made them essential to the proposal? As an example, the Willamette NF is proposing to retain 10 big trees at harvest in some visual retention and partial retention areas to increase the usefulness of these areas as wildlife corridors as the next stands grow up underneath these trees. Is this structure what you had in mind? What rotation length would be adequate in these areas for the necessary habitat?

What is the scientific basis for the endorsement of visual corridors and other areas where timber harvest will be moderated? How much of each forest should be dedicated to these types of allocations? Where should they be placed vis-a-vis the HCAs for maximum effect? Looking **at a map of the Mt. Hood or Willamette proposed allocations for their draft or final forest plans, we see some visual corridors that (approximately) connect adjacent HCAs. Other visual corridors lead off the forest into the Willamette Valley, such as the Clackamas River visual corridor, but do not connect to other HCAs. In fact, that one heads down the road to Estacada and Gresham. I am not sure we want to encourage owls to head in that direction. Does the location of visual zones or riparian zones vis-a-vis the HCAs matter from the standpoint of the conservation strategy for the owl?"

ANSWER. Dispersal of spotted owls between HCAs is an essential requirement if the proposed strategy is to succeed. The ISC was aware that some land allocations preclude timber harvest and others prescribe long rotations of more than 100 years. These types of allocations result in forest stands with structural attributes important to the security of dispersing spotted owls by providing cover, foraging areas, and roost sites. The 50-11-40 rule prescribed for the areas outside the HCAs provides only marginal security for dispersing spotted owls. The ISC does not believe that it is prudent to initiate management totally at marginal levels, as the probability of failure is increased by doing so. The stands in long rotation or land allocations that exclude timber harvest stands in long rotation provide some extra measure of security needed to enhance the probability of successful dispersal. The response of spotted owl to new silvicultural practices is, for the most part, unknown and untested. The rotation ages necessary to produce spotted owl habitat are not known precisely and probably vary considerably with plant community and circumstances. We assume that the more closely stand structure mimics conditions of suitable or superior habitat, the more likely it is that it will be useful to and used by owls. Silviculturists can make projections based on site specific data, but actual empirical data are not available. The ISC plan calls for research outside the HCAs and analysis of past activities that would answer these important questions. The ISC did not propose or approve abandonment of any special management zone in behalf of the proposed owl management strategy. For example, visual corridors not connecting HCAs should be retained. As our report points out (pp. 26-27 and p. 309), juveniles commonly do not, so far as is known, disperse along topographic or vegetational corridors. So, corridors retained along roads to screen the public from clearcuts, etc., leading to say Estacada or Gresham may or may not lead dispersing owls astray. But, their retention does provide foraging and nesting habitat.

148. QUESTION. "To control overall harvest in the areas between HCAs, the report advocated retaining existing considerations for other resource values such as wildlife trees and downed-wood retention. Again, we do not know what 'existing' refers to. Also, the BLM plans now in existence call for much lower levels of these two resource values than do the Forest Service plans about to be adopted. What levels of wildlife trees and downed-wood retention are considered necessary?"

ANSWER. "Existing" refers to the amounts specified in either completed forest plans or the "estimated final plan" for those forests that are completing plans. In the case of the BLM, "existing" refers to the plans under which they are now operating. We consider the BLM attention to these matters marginal, at best, but perhaps the best that can be expected in the short-term. We were unwilling to advocate similar management on Forest Service lands. Such is acceptance of the lowest common denominator. It is our hope that the BLM will provide more attention to these attributes of spotted owl habitat in their new forest plans to become final in 1992 in which administrators have promised much as to what will be considered. Again, we consider the BLM lands the weak link in the strategy, but BLM managers will need some time to adjust to giving more consideration to wildlife than has been traditional.

149. QUESTION. "The report also advocated the '50-11-40 rule:' 'Timber harvest shall be permitted only when 50 percent of the forest landscape consists of forest stands with a mean dbh of 11 inches and a canopy closure of 40 percent; all land-use allocations on forest lands on all ownerships within the quarter township contribute to meeting this rule.' (page 348). What is the scientific rationale for the 50-11-40 rule?"

ANSWER. We have information on the stand conditions that owls use for feeding. Most feeding occurred in superior habitat typified by old-growth conditions. However, significant amounts of feeding did occur in younger stands. We concluded that stands that met the 50-11-40 rule would support feeding, and roosting for dispersing juveniles and would likely cover enough of the intervening landscape to allow reasonable protection from predators during dispersal and enough food to prevent starvation although this assumption would require monitoring to evaluate. Again, we had no intention to obligate private landowners to any compliance with the 50-11-40 rule. We "encouraged" the participation of private landowners because their participation would increase the likelihood of providing for long-term viability of the populations.

150. QUESTION. "Why do you need both the 50-11-40 control and also visual corridors and other areas where timber production will be moderated? Do they fulfill different habitat requirements, i.e., one foraging habitat and the other dispersal habitat? What vision of the way the forest would look under the 50-11-40 rule and visual corridors drove you to this combination?"

ANSWER. The "visual corridors and other areas where timber production will be "moderated" contribute to meeting the 50-11-40 rule--i.e., they are not in addition to the requirements of that rule. The combination of factors was estimated by us to provide habitat suitable for dispersing owls, and perhaps to support some pairs, without institution of the formal requirement of dedicated corridors of habitat between HCAs. In our opinion, such dedicated corridors would be much more costly in terms of impact on the ASQ and would be no more satisfactory for supporting successful owl dispersal.

The "quality" of habitat in areas reserved from timber harvest or dedicated to long-term rotations are more likely on average, over the long-term, to provide better owl habitat than stands on shorter rotations under the 50-40-11 rule.

151. QUESTION. "Do township lines matter or are you talking about this control on parcels of approximately 6,000 acres in size? Subwatersheds or other administrative units that are this size or smaller might be more logical geographic units for such control. As an example, the Willamettee NF, in their proposed final plan, already controls on crown closure by subwatersheds of 3,000-7,000 acres in size. Would that geographic configuration be acceptable?"

ANSWER. Please see answer to number 152.

152. QUESTION. "The report states that "where quarter township contains multiple ownerships, the percentage is computed separately for each owner based on the amount of the ownership." (page 348 of the ISC report). Thus, the report stipulates that each owner in each township would be responsible for adherence to the rule on it's lands. With BLM's checkerboard ownership, alternating sections with private land, that means only half of the township would be formally under the rule. In implementation, therefore, the direction might become the 25-11-40 rule since only one-half of one-half (one-quarter) of

the township would be required to meet the size and crown closure requirements."

ANSWER. Such would be true if none of the private land ever meets the criteria of having 11 inch trees with 40 per cent canopy closure. There will be some (perhaps much) of the private land depending on the rotation age selected for such lands that will meet the criteria at a given time. The ISC considers the habitat situation on BLM lands and intermixed private lands, as it relates to dispersal of owls, to be quite marginal at present and apt to get worse. The application of the 50-11-40 rule to BLM lands results, possibly (depending on what private landowners do) to be a lesser standard than the standard on Forest Service lands only because a stiffer requirement would have a short-term effect that would reduce timber harvests well below 70 percent of present levels in some areas. It is not, in the ISC's opinion, a fully satisfactory situation, but it is likely the best possible given prevailing political and economic constraints in the short term. The proposed strategy calls for re-evaluations after 3 years. In some instances, BLM lands can be coupled with FS lands to improve the situation. If dispersal is satisfactory, standards on Forest Service lands may be reexamined. If dispersal is less than satisfactory, the standard may have to be raised on BLM lands. Please note, however, that the ISC report does not place requirement on private lands.

It should be noted, however, that the inability to meet the 50-11-40 rule on BLM lands is not related to the checkerboard ownership. It is due solely to the condition of BLM lands. Also note, that it would be possible to double the size of HCAs on BLM lands to make the HCAs comparable to those of Forest Service lands if the same standard of owl welfare seemed desirable. It should be emphasized that "50-11-40" forest conditions are meant to be provided continually, over time, even if actual stands that contribute to these average conditions change in structure as timber is cut and regrown. Therefore, if, for example, BLM chooses to measure compliance to the 50-11-40 guideline by averaging in conditions on private land (which would be ideal), they would have to project how long such conditions would exist and what would be available when timber on the private lands is to be harvested.

153. QUESTION. "Is that acceptable to the scientific committee that wrote the report or does the Committee expect BLM to make up for deficiencies in meeting this rule on intervening private land? If it is acceptable in townships that contain BLM land alternating with private land to only require that 25 percent of the quarter township meet the rule, why isn't this lower requirement acceptable in townships where Forest Service and BLM control all the land?"

ANSWER. Please see answer to question 74. The situation on BLM lands and interspersed private lands are not presently satisfactory so far as dispersal habitat is concerned. This results from the checkerboard ownership and past cutting levels and practices on both BLM and private lands. But we believe it is the best we can hope for under the circumstances. It should be noted that even this lesser requirement, as compared to Forest Service lands, has created a furor that has lead to consternation of BLM and elected officials. The marginal situation on BLM lands, however, is no excuse to transfer that standard to management of Forest Service lands, where more options remain.

There is no expectation that BLM should make up the discrepancies on private land. However, it should be noted that this makes the reduced contribution of BLM lands, as compared to Forest Service lands, even more critical. Any lesser strategy for these BLM lands is apt to have severe consequences on the ability of owls to disperse in such situations. Also, note that the 50-11-40 rule applies only to BLM lands--to blame inability to meet this rule on BLM lands only on the basis of the checkerboard ownership will not stand scrutiny.

154. QUESTION. "In the report, the authors advocate that private land within HCAs provide 'foraging habitat.' How would private land management have to change to meet that requirement? Does the Committee advocate that private land intermingled with federal land outside the HCAs meet the 50-40-11 rule, too?"

ANSWER. Please see the answer to question number 74. There is no recommendation in the ISC report that will cause alteration in management by private landowners.

Questions Submitted by Senator Mark Hatfield on Behalf of
Senator Brock Adams of Washington

155. QUESTION. "Would you consider the plan your committee prepared to be the optimum one for the northern spotted owl? Do you think that there is a less optimal approach that would suffice to save the owl but would not produce such devastating economic impacts?"

ANSWER. See answers to questions 1, 3, and 68. The ISC strategy is not the optimum strategy. The biologically optimum strategy would be to immediately cease all cutting of presently suitable habitat and near-suitable habitat and to grow much forest land back to suitable habitat over the entire range of the owl. The strategy is a compromise that gives a good probability of success in preserving the owl in viable numbers, well-distributed, and allowing continued cutting of some suitable habitat. The strategy could easily be made "more optimum" for the owl by increasing the number and/or size of HCAs, decreasing the distance between HCAs, improving habitat within and between HCAs, or extending the strategy to private lands, etc. Each such action would cause further declines in the timber supply. Please remember, the ISC strategy allows a possible reduction of 50 percent in the extant population. This is likely unprecedented in a management strategy for a threatened species.

156. QUESTION. "Mr. Thomas, assume for the moment that our only concern here is to protect the owl, and we did not need to consider the economic impacts. Would you still have made the same recommendation?"

ANSWER. No. We would have recommended cessation of all harvest of mature and old-growth timber and action to produce more suitable habitat in the shortest possible time. Because most spotted owl populations studied to date are showing declines in numbers both from habitat loss and from demographic conditions, applying the ISC Conservation Plan would not be the best strategy for maximizing future viability of the subspecies. Please see answer to question 155.

157. QUESTION. "Does your proposal assume any reduction in owl populations in the near term, such as the next 10-20 years? If so, could you explain what will cause that reduction?"

ANSWER. Owl populations will indeed decline in the near term, even with execution of the ISC strategy, because not all suitable spotted owl habitat would be maintained. Much currently (and historically) suitable habitat occurs outside the HCAs, and these areas would be subject to forest management activities, such as logging, that would reduce or eliminate its suitability as habitat for spotted owl pairs. The ISC conservation strategy does not entail preservation of all currently suitable habitat. Further, we believe that the owl population will decline to some unknown, but significant, degree even if all cutting of suitable habitat ceased. This results from the likelihood that birds displaced from suitable habitat by past logging or natural reasons such as fire are already occupying more marginal habitats and are less likely to survive and contribute to population viability over the long-term.

158. QUESTION. "To give us a perspective on this figure, could you tell us how much of a drop in owl populations would occur if we stopped logging tomorrow on all National Forest land that contains spotted owls?"

ANSWER. We don't know. To provide the best answer would require knowing, rather precisely, how many owls there are, where they are located, whether they are singles or pairs, and the habitat conditions within which each pair or single existed. Then, it would be necessary to analyze each situation and speculate as to the short and long-term outcomes for the survival of those individuals. We do anticipate, however, a significant decline in the population over a period of 10-20 years even if all logging ceased on all federal lands with spotted owls. An estimate could be made, based on capability of habitat to support spotted owl pairs, but that would provide a maximal estimate of carrying capacity, not actual population sizes expected to occur.

159. QUESTION. "Does your plan benefit other species in addition to the spotted owl?"

ANSWER. Yes. However, aside from spotted owl prey species (including flying squirrels, wood rats, and other rodents) we made no formal assessment of effects on other species, nor was it the committee's charge to consider such effects or conduct such assessments. All species particularly favored by "old-growth habitat conditions" would be benefited. Though we did not analyze the effects on water quantity, quality, and timing and rate of discharge, it seems likely that there may be benefits to aquatic life as well. In our opinion, costs and benefits of the strategy we recommend should be extended beyond the analyses on timber supply to include appraisal of effects on water quality and quantity, other wildlife, fisheries, recreation, scenic values, etc. The issue is more complex than spotted owls and timber--it always has been.

160. QUESTION. "While it does seem logical that your plan would benefit other species, can you state with confidence that the spotted owl conservation plan would adequately provide for viable populations of all these species?"

ANSWER. No. There may be problems with the spotted owl HCAs being too far apart and/or not well enough connected for some of the smaller, less motile species associated with old-growth. However, it was one of our assumptions that such linkages, at least for spotted owls, would occur from other land and species allocations, at least on National Forest lands. As well, the use of the 50-11-40 forest conditions between HCA's might serve to help link populations of old growth associates, although this assumption would require research or monitoring for determining its validity. At present, there are no available quantitative assessments of effects of the ISC Spotted Owl Conservation Plan on other species. However, the species in question would likely be much better provided for than they are at present. We had no charge to evaluate benefits of the ISC strategy on other species.

161. QUESTION. "Many of the HCAs extend onto private and state land. These landowners cannot be forced into managing their land under the guidelines proposed in your plan. . .they must participate voluntarily. Can your plan

succeed without some designation of state and private lands within the HCAs? What will happen to the owl population if private and state landowners refuse to participate?"

ANSWER. There is no intention to require compliance by private or state landholders with the ISC report. The private lands that were included inside HCA boundaries are not subject to any constraint. Private lands were included only because of the checkerboard or other ownership patterns that made impossible to draw an outside boundary for a proposed HCA without including private lands. Outside of federal ownerships, state ownerships seemed to provide the best chance of maintaining owls in viable numbers over the long term in some areas--particularly in southwest Washington and northwest Oregon--due to the public (albeit, state) ownership. Note that these lands were included inside dashed lines and identified as a "recommended HCAs" as opposed to "designated HCAs." This was done in recognition that these state lands were presently dedicated to intensive timber production by law. Such management is unlikely to sustain owls over the long-term. However, the states have recognized that the owl is "endangered" (Washington), "threatened" (Oregon), or "a species of special concern" (California) and these states may wish to provide, over the long-term, habitat that would enhance the chances of the sub-species persisting in areas where no federal ownerships exist.

Without a commitment by the states to back up the concern expressed by their "listing decisions," there is little long-term chance for sustaining viable owl populations in southwest Washington (which probably assures long-term isolation of the Olympic Peninsula population) or northwest Oregon. This increases the risk to long-term viability of the spotted owl throughout its range. It does not mean that the conservation strategy would be unsuccessful on the federal lands alone. It does, however, mean that the appropriate level of management on those federal lands becomes even more critical. As the range is compressed, the risk increases. As populations are isolated, the risk increases. It is logical to counter that increasing risk by decreasing the risk where the strategy is actually applied. Such could be done by increasing numbers or sizes of HCAs, decreasing distances between HCAs, improving habitat within and between HCAs, or extending the strategy to include private lands.

162. QUESTION. "As a wildlife ecologist, could you address the desirability of setting aside large reserves of old-growth forest?"

ANSWER. The question begs a question--desirability for what purpose? We generalize. Setting aside large reserves of old-growth forest should be beneficial to wildlife species associated with such habitat conditions. This, in turn, is related to the maintenance of the "old-growth ecosystem" including the invertebrate and plant communities. Such could be a key attribute to any scheme of preserving biodiversity, as "old-growth," as we know it, is unlikely to recur under managed forest regimes. This moves the discussion away from a single species, at best an "indicator species," to a larger question of landscape ecology and ecosystem management. As a general rule "large" habitat blocks are much more likely to function as a specialized habitat, much more likely to persist over time, and much more likely to harbor more species of plants and animals common to that habitat than smaller blocks. In this case, the choice of the owl as an indicator species was fortunate because of its large home range size. An HCA of a size to support 20 or more pairs is likely large enough to accommodate any presently occurring species.

163. QUESTION. "At a recent House joint subcommittee hearing, Dr. Jerry Franklin, Chief Plant Ecologist for the Forest Service in Region 6, characterized your committee's report as a minimal risk plan and suggested that experimentation with "New Forestry" within some of the proposed spotted owl habitat conservation areas might constitute an acceptable level of risk. Would you respond to that idea?"

ANSWER. See answer to question number 5.

164. QUESTION. "What other criteria, such as water quality and biological diversity, should be considered in addition to the spotted owl?"

ANSWER. See answers to questions 11, 159, and 162.

165. QUESTION. "Many of the habitat conservation areas extend onto private and state land. These landowners cannot be forced into managing their land under the guidelines proposed in your plan. . .they must participate voluntarily. Can your plan succeed without some designation of state and

private lands within the HCAs? What will happen to the owl population if private and state landowners refuse to participate?"

ANSWER. Please see answer to question number 161.

166. QUESTION. "As a wildlife ecologist, could you address the desirability of setting aside large reserves of old-growth forest?"

ANSWER. Please see answer to question number 162.

167. QUESTION. "I understand that the director of the Bureau of Land Management has stated that he wants his staff to re-examine the spotted owl situation on the lands his agency manages to see what other options exist other than your plan. What is your reaction to this proposal?"

ANSWER. See answer to question number 8.

168. QUESTION. "How would you define the term 'viable spotted owl habitat'?"

ANSWER. We are not aware of our use of the term "viable spotted owl habitat" nor do we recognize the term. We used "suitable habitat," "marginal habitat," and "superior habitat." Were we to define viable spotted owl habitat, it would be as follows: Habitat that provides for all the life needs of spotted owls including foraging, roosting, dispersal, nesting, and successful fledging of offspring over a prolonged period. This is for a single pair. It would also have to allow for variations in prey densities and environmental conditions, such as weather and catastrophes, so that the site is occupied as much over time as possible, becomes readily recolonized as owls die or emigrate, and so that there is a high likelihood of maintaining an adequate amount of forests in suitable habitat conditions over the long run. This would be closest in definition to superior habitat as discussed in Appendix F of the ISC Report.

169. QUESTION. "How would you define the terms 'spotted owl nesting areas' and 'spotted owl nesting pairs'?"

ANSWER. Spotted owl nesting areas are specific locations where spotted owls construct nests, lay and incubate eggs, and fledge young. Habitat selected and used by a nesting pair of spotted owls can be described at several spatial scales, including: (1) the actual tree that holds the nest, (2) the forest stand in the immediate vicinity of the nest tree, (3) the complex of forest and other vegetation stands within the foraging home range of the pair, (4) the broad landscape, at sub-basin scales, that encompasses the pair home range and those of other, adjacent pairs. To ensure successful management for spotted owl nesting pairs, habitat conditions should be provided at each of these scales. Spotted owl nesting pairs are male and female owls that form a pair, mate, nests, and the female lays eggs. The nesting or evidence of nesting, such as sightings of young, must be observed to classify it as a nesting pair. Spotted owls do not necessarily nest every year, so the pair need not be observed nesting each year to be classified as "nesting." Similarly, "spotted owl nesting areas" need not have nesting pairs every year to be so classified.

170. QUESTION. "Would you describe how you geographically defined individual spotted owl habitat conservation areas (HCAs)?"

ANSWER. The process involved examining maps provided by the BLM, National Park Service, and National Forests that portrayed spotted owl habitat and showed locations of known spotted owl pairs. The habitat was classified according to whether it was in Wilderness areas, lands allocated for uses other than timber production, or lands suited for timber production. Starting, where possible, from blocks of spotted owl habitat in Wilderness areas or other areas not designated for timber production to minimize the effect of the strategy on timber supply, we developed a network of HCAs using the standards and guidelines outlined in the ISC strategy (Appendix Q). Based on dispersal data for juvenile owls, we spaced the larger HCAs (for 20 or more pairs) no farther than 12 miles apart and smaller HCAs (for less than 20 pairs) no farther than 7 miles apart. Amounts of suitable spotted owl habitat and presence of spotted owl pairs guided the exact placements. We ran through this drill a number of times to obtain the most efficient placement in terms of satisfying the needs of the owl and minimizing impact on timber supply. Other arrangements are, obviously, possible and are allowed if the standards and guidelines are followed and there is no net loss of owl pairs.

171. QUESTION. "How many acres within the average HCA would meet the definition of viable spotted owl habitat'?"

ANSWER. As noted above, the term "viable spotted owl habitat" was not used in the report, we assume that it is synonymous with "superior habitat." On the average, suitable spotted owl habitat, which includes superior and marginal habitat, comprises about 50 percent of the total acreage in HCAs on National Forests. On BLM lands, the percentage of suitable falls to 25-30 percent. This is mainly because designated HCAs include previously logged areas that we expect to grow back into suitable habitat and remain in such condition for a much longer time than would occur in forests managed for timber production. Again, the BLM lands are, in general, the weak link in the strategy and great care must be taken with the short-term management of these lands if they are to contribute to meeting the goal of the strategy.

172. QUESTION. "What percentage of the average HCA are now cut over, or are second-growth forests of less than mature forest age?"

ANSWER. We estimate, without detailed analysis, that about 40 percent of the Federal lands within HCAs have been logged or are in second growth.

173. QUESTION. "[Regarding the areas outside the HCAs that serve to make the need of corridors unnecessary], did you assume these areas will be managed in a

manner similar to the way they are currently being managed? For example, did you assume that "scenic" or "riparian" areas would continue to be classified as such?"

ANSWER. We determined ,based on the forest plans and some designations made by the BLM, that there were land allocations and designations for various purposes that would provide for spotted owl dispersal. In Appendix Q, the standards and guidelines for implementing the ISC strategy call for no decrease in classification of forested lands that are not suited for timber production without evaluation of the effect on habitat to support owl dispersal capability. This includes roadless recreation areas, scenic corridors, riparian areas, and lands where there may be soils or forest regeneration problems following logging. Lands with longer rotations than lands dedicated to timber production lands were also recognized as providing important habitat for dispersing spotted owls. Should the land allocations be changed, it would be necessary to reexamine the issue of corridors. Use of this approach was designed to minimize negative effects on timber supply. Designation of corridors with more rigid standards and guidelines for management as prime dispersal habitat is the alternative. Such would dramatically increase impact on timber supply.

174. QUESTION. "In developing your plan, did you assume that new forest plans would be in place, or old ones?"

ANSWER. The ISC Plan was based either on final plans, as in the case of the Siskiyou National Forest or the plans as they were being put in final form.

These are best described as the Forest's best estimate of the form of the final plan.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

TAKE
PRIDE IN
AMERICA

IN REPLY REFER TO:

JUL 11

1750(140)

Honorable Dale Bumpers
Chairman, Subcommittee on Public Lands,
  National Parks and Forests
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510-6150

Dear Mr. Chairman:

We are pleased to enclose responses to questions submitted in your letter of June 13, 1990, as a followup to the May 23, 1990, hearing of the Subcommittee on Public Lands, National Parks and Forests on "The Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl."

Some of the questions received were applicable only to the Forest Service or the Fish and Wildlife Service and our submission does not respond to those questions.

We trust this information will be helpful in resolving this critical issue.

Sincerely,

Cy Jamison

Director

Enclosures

QUESTIONS SUBMITTED BY SENATOR BUMPERS

Implementation

Q1. What are your specific plans for implementing the recommendations of the Thomas Report? Is there any legal obligation to implement the conservation plan at this time?

A1. We propose to implement most of the Thomas Report recommendations, on an interim basis, pending completion of our new western Oregon land use plans. We have been advised by our Solicitor that preparation of this conservation plan is one recommendation of one study team. The plan does not purport to be the only workable solution to saving the spotted owl and we will continue to search for better alternatives. Our obligations under the Endangered Species Act are to consult with the Fish and Wildlife Service if our operations may affect a listed species, and to take steps to conserve listed species. We intend to comply fully with those obligations.

Q2. Do you believe the Thomas Report would be an appropriate recovery plan if the owl is listed?

A2. We have asked the U.S. Fish and Wildlife Service to respond to this question.

Economics

Q3. The ISC Report states that "A balanced assessment of the impacts of this strategy must consider water quality, fisheries, recreation, soils, streamflows, scenic values, biodiversity, and other species of wildlife. All aspects of such a decision should be weighed in the balance. The issues are not limited to questions of owls and timber supply, as important as those are. The matter is not that simple -- it never has been". The entire "spotted owl issue" is just one of many related concerns. All should be considered. So far all we have seen in the way of an assessment is the estimated effects of the proposed plan on timber and associated jobs. What efforts are underway to conduct the more comprehensive assessment the ISC report calls for, and when can we expect to see the result of such an assessment?

A3. All these issues will be considered in the land use planning process.

Q4. I am looking at a chart which summarized the economic effects of implementing the Thomas Report. This chart displays a potential loss of approximately 25,000 jobs by 1995 if the recommendations of the report are implemented. You also state in a footnote that these figures also incorporate some job loss expected by moving from draft to final forest plans. Is that correct? I would first like to ask, then, what job loss is strictly attributable to the recommendations of the Thomas Report and where is this figure listed in the Economic Impacts Reports?

A4. The answer to this question relates to the information best supplied by the Forest Service.

Q5. I would further note that this chart shows that at least for the short term an expected increase in jobs of private lands would mitigate that about by about 12,000, for a actual net loss of 13,000. Is that correct? Could you explain how that transfer of jobs would occur?

A5. The answer to this question relates to the information best supplied by the Forest Service.

Q6. As the timber industry moved out of its recession in the early 1980's to record level harvests in the mid-to-late 1980's did we see a proportionate increase in timber-related employment? Over the years, has increased automation of mills resulted in a loss of employment? If so, how many jobs have been lost to automation in the Pacific Northwest? How many more do you expect to lose to automation in the future? What is the current job/mmbf ratio? What was that ratio 10 years ago? Twenty years ago? What is that ratio expected to be in the future?

A6. There was a proportionate increase in timber-related employment in the mid-to-late 1980s. Increased automation of mills has resulted in loss of employment but we do not know the actual number. We expect the trend to continue as additional mills are automated in the future. The estimated current job/mmbf ratio is 10:1, down from approximately 17:1 10 years ago. We do not have comparable figures for 20 years ago nor do we know what ratio to expect in the future.

Q7. How much of the potential decline in harvest due to the Thomas Report [can] be mitigated by a ban of exports of state lands? By stricter substitution requirements on federal lands?

A7. We have no data on exports from State lands.

As to the second part of this question, we believe that minimal or no mitigation could be expected from the imposition of stricter substitution requirements on Federal lands. In Western Oregon, only approximately 2 percent of the BLM timber purchasers export private timber. Therefore, stricter substitution requirements would have little mitigation effect.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND WALLOP

Q1. Do you think the Thomas Report is credible? If so, why?

Are there other ways to protect spotted owl habitat and at the same time maintain the forest logging and products industry?

A1. The Thomas Report was completed by credible scientists using existing information to create a single strategy for management of the spotted owl. There may be other ways to accomplish the same end. We intend to pursue some of those alternatives in our ongoing planning process.

Q2. Outside of Region 6, have the agencies decided what are the appropriate procedural steps to follow in order to implement the interagency committee report or other owl management plan? For example:

Will the Regional Guide for the Forest Service Region 5 have to be amended to include standards and guidelines for owl management?

How many Region 5 forest plans will be affected?

How does BLM plan to proceed?

A2. Parts 1 and 2 of this question are for the Forest Service.

As to the third part, the BLM will consult with the Fish and Wildlife Service on timber sale actions which may affect the spotted owl. We have a small land base in California and, therefore, a small timber sale program.

QUESTIONS SUBMITTED BY SENATOR HATFIELD

Q1. Mr. Jamison, in light of the BLM's unique management situation in Western Oregon, please describe for us how adoption of the Thomas Plan would affect BLM's management activities.

A1. Adoption of the Thomas plan by the BLM without congressional direction to do so may violate NEPA and FLPMA planning requirements, and would be an invitation to litigation and management paralysis.

Adoption of the plan would sharply limit BLM's timber management program, both by placing substantial acreage off-limits to timber management and by applying timing constraints (the 50-11-40 rule) regarding timber harvest to all the remaining land base. In the short term it would cause redirection of timber sale planning. For the foreseeable future it would reduce timber sale levels to around 60 percent below levels for the past decade.

Adoption of the plan would lead to complicated negotiations with intermingled private landowners in an attempt to revise joint road use agreements that currently authorize road use and construction within HCAs. It would also lead to closure of many existing roads, one active BLM seed orchard, and some recreation sites. Recreation management emphasis in HCAs would shift from roaded and site-oriented use to unroaded use.

A large number of tree progeny test sites that BLM has been managing and monitoring for over a decade would lose much of their study value, because of loss of further management opportunities. Many of these represent cooperative efforts involving ten or more landowners. Several long-term research sites involving thinnings and fertilization installed in cooperation with universities and experiment stations would be affected.

Adoption of the Thomas plan this year or next may moot BLM's current resource management planning process for western Oregon, and the related public input received.

Q2. Earlier, I asked Chief Robertson to explain whether adoption of the Thomas Plan would result in changes in forest plan allocations between HCAs. What about the BLM? Although BLM has not yet made public its new plans for the 1990's, would such adjustments be possible or likely in inter-HCA areas on your lands?

A2. Adoption of the Thomas plan would affect BLM's management of land between HCAs. The 50-11-40 rule would currently prohibit harvest of timber in much of this area because of its requirements for specific stand conditions and spatial distribution of stands. Some sampling done by field staff indicates that, in some districts, three-fourths of the area between HCAs would be excluded from timber harvest during the 1990s by that rule. This implies potential concentration of timber sales in the remaining quarter. Such concentration of sales might be found to adversely affect water quality or have other adverse environmental consequences, further constraining BLM activities. Concentration of sales would also tax some road systems because of increased traffic.

Q3. In light of the requirements of the O&C Act and the Federal Land Policy and Management Act (FLPMA), please discuss for us BLM's current timber management practices and whether "New Perspectives Forestry" could readily be adopted on your lands.

A3. "New Perspectives Forestry", as we comprehend it, has two dimensions: (1) retaining, in "clearcuts", some merchantable trees and other elements of forest structure; and (2) clustering, rather than dispersing, clearcuts, to retain large blocks uncut at any time. Although it could be argued that the O&C Act prohibits the first dimension, since it is based on speculative science and would reduce sustained timber yields, we believe it is implementable on O&C lands. The second element would pose no potential conflict with statutory mandates, but is generally not implementable because of BLM's land pattern and history of timber harvest with dispersed clearcuts.

Q4. The report states that "where quarter townships contains multiple ownerships, the percentage is computed separately for each owner based on the amount of the ownership." (page 348). Thus the report stipulates that each owner in each township would be responsible for adherence to the rule on its lands.

With BLM's checkerboard ownership, alternating sections with private land, that means only half of the township would be formally under the rule. In implementation, therefore, the direction might become the 25-40-11 rule since only one-half of one-half (one quarter) of the township would be required to meet the size and crown closure requirements.

Is that acceptable that the report expects BLM to make up for deficiencies in meeting the "50-41-11" rule on intervening private land? If it is acceptable in townships that contain BLM land alternating with private land to only require that 25 percent of the quarter ownership meet the rule, why isn't this lower requirement acceptable in townships where Forest Service and BLM control all the land?

4A. We interpret the Standards and Guidelines for the 50-11-40 rule to be applied separately to each landowner in a quarter township. (See published, bound version of "Thomas Plan", page 327, third paragraph). The question implies that the calculation for a quarter township would be cumulative of all ownerships and BLM would be its neighbors' keeper. If so, we would anticipate little opportunity to sell BLM timber, given private timber rotations averaging 50 years or less.

5Q. The BLM has been monitoring spotted owls on its lands with extensive use of banding for some time. How have you utilized this data to show how BLM's management of its lands is impacting the owl?

5A. Banding and reobservation of banded spotted owls is just beginning to provide BLM managers with some new insights into demographic data on the owl. However, results from banding studies generally begin to provide sufficient data on which to base management decisions after a minimum of 10-15 years of data collection. To date, limited data on spotted owl habitat use has been gained through the use of banding - the majority of this type of data is from radio telemetry studies. BLM's banding information is now beginning to be routinely used on an operational basis to adjust timber sale locations when resident spotted owls (determined by banding) are identified within 1/2 mile of a sale. Timber sale boundary adjustments are not made when a "floaters" owl, an unbanded individual owl with no apparent home range, is found within a timber sale.

Some other preliminary findings from the BLM banding studies follow:

1. The mean dispersal distances of color banded juvenile spotted owls has been found to be about 12 miles. This information can be used to select the placement of dispersal habitat or habitat linkage corridors.

2. BLM has determined that general calling inventories do not locate all the owls in a drainage. However, by banding owls the density of known owls in an area can be documented.

3. BLM has found that in some areas spotted owls have remained in a drainage following a timber sale.

4. We have also found that some pairs of owls have raised young in habitat generally thought to be unsuitable; however, the sample size is too small to generalize the percent of time this occurs.

6Q. Since the SOHAs on BLM lands are highly fragmented in comparison to the Forest Service, and have been for years, is there any evidence that pairs on BLM SOHAs are disappearing at greater rates than Forest Service SOHAs?

6A. We are not aware of any analysis that has been conducted on this type of comparison. Demography studies, including banding of spotted owls, have not been conducted for enough years to address this question, especially since the Forest Service does not have an operational banding program on the Oregon forests. Also, BLM has found that some historically occupied spotted owl sites are often reoccupied after several years of no occupancy if habitat remains. Therefore, it is often difficult to state unequivocally that a site has been totally lost because of the natural turnover in bird populations and the fact that reoccupation often occurs unless the habitat has been totally removed.

7Q. Have any of you developed a position on whether to accept the Thomas Plan as recommended? Is there any truth to the rumor that listing the owl by Fish and Wildlife is being advocated so that the Thomas Plan could be adopted as a recovery plan? What are the advantages of such an approach? What are the disadvantages?

7A. BLM cannot accept the Thomas plan as recommended without compliance with FLPMA planning requirements and NEPA. We have, however, proposed to implement most of its recommendations, on an interim basis, until we complete new western Oregon land-use plans. We do not have any factual basis or information for answering the second question stated under this item. We offer the following as possible advantages and/or disadvantages to accepting the Interagency Conservation Strategy (ISC) for the Northern Spotted Owl:

Advantage: The Interagency Scientific Plan has laid out the ground work for completion of a recovery plan. Thus, the recovery plan could be completed within a relatively short timeframe.

Disadvantage: (1) Implementation of the ISC plan as a recovery plan could be construed as circumventing the Endangered Species Act because the ISC plan has not undergone public review prior to preparation;
(2) implementation of the ISC plan as a recovery plan could eliminate some BLM land use planning alternatives/options from consideration without benefit of analysis in Bureau of Land Management Resource Management Plan/Environmental Impact Statements; (3) the ISC plan only addresses the habitat management strategy for the spotted owl. However, there are many other priority wildlife species which require other habitat consideration, and (4) the ISC plan would have a higher impact on BLM's allowable timber harvest plan than some other options that could also provide substantial owl protection and preserve key old growth stands.

8Q. (on behalf of Governor Deukmajian)

It has come to my attention that the Administration is considering making a listing decision prior to June 23rd. What are the advantages of making this decision before the one-year deadline? What are the disadvantages?

8A. Any decision regarding the listing of spotted owls falls under the jurisdiction of the U.S. Fish and Wildlife Service. We are not aware of any strategy they had regarding such decision. [Decision to list as "Threatened" was announced June 22, 1990].

9Q. (on behalf of Governor Gardner)

Where HCAs are in federally designated Wilderness Areas or National Parks, will agencies aggressively control wildfire if the HCAs are threatened?

9A. It is BLM policy to aggressively control all wildfires on the public lands. A fire in a HCA, within or outside of a wilderness area, would increase the element of priority of BLM fire control efforts. However, all guidelines that prohibit the use of heavy equipment in a wilderness area would be adhered to by BLM.

10Q. What will be the impact of immediate implementation of the ISC strategy on other forest resources, such as roadless areas, other wildlife needs, old growth outside of HCAs?

10A. Immediate implementation of the ISC strategy would lead to acceleration of harvest of old growth stands remaining available for harvest, if timber sale levels approach those of 1989 and 1990, foreclosing future options for our resource management plans. In addition, a large share of the remaining volume would come from fast-growing young stands not programmed for harvest in current plans until they are more mature, resulting in lower sustainable harvest levels in the future. If timber sales approached 1989-90 levels, impacts on other resources (e.g., water quality, other wildlife) would be concentrated in areas remaining available for timber harvest. If timber sale levels were sustainable from those lands remaining available, the effect of such concentration would be less.

11Q. (on behalf of the Oregon Forest Industries Council)

Could enough timber sales be scheduled outside HCAs, given cumulative effects constraints, including 50-11-40, to meet the projected ASQ?

11A. We could not schedule enough timber sales outside HCAs, given cumulative effects constraints (including 50-11-40), to meet the current ASQ of 1.176 billion board feet.

12Q. What information led you to conclude that half of the short-term employment loss that otherwise would result from implementation of the ISC recommendations would be avoided through an increase in logging on private forest lands?

12A. The conclusion regarding short-term employment loss came from information provided by the Forest Service. Response to this question should come from that agency.

QUESTIONS SUBMITTED TO SENATOR HATFIELD FROM THE SIERRA CLUB

Q1. Does the analysis evaluate any increase in timber supply from restricting log exports in Washington, Oregon, and California. Do the agencies intend to estimate the reduced job losses associated with various levels of log export restrictions?

A1. The economic effects analysis includes two log export scenarios. Logs 1 represents the effects of restrictions from State and Federal timberlands and Logs 2 reflects the effects of total elimination of softwood log exports. Job loss changes could then be projected from these two export assumptions.

Q2. Isn't it true that the increase in private timber supply in the short-run estimated in your study strictly the result of market induced responses due to higher timber prices? Then there has been no evaluation of the potential increase in timber supply from small non-industrial forest lands that could be obtained from tax incentives or other legislation that would encourage more production and better stocking of these lands?

A2. No, the increase in private timber supply is projected due to a decrease in overall Federal timber supply. Tax incentives or other legislation favorable to small nonindustrial forest land owners could increase supply of some size classes of timber as available from that source.

Q3. Did your analysis evaluate any potential benefits from legislation of policy initiatives that could provide economic aid and encourage economic diversification for impacted communities?

A3. This report was limited to economic effects from changes in timber supply resulting from implementation of the Conservation Strategy of Dr. Thomas.

Q4. Did your study evaluate any potential benefits to current or future tourism land recreation by retaining a substantial amount of these old growth forests?

A4. This report was limited to economic effects from changes in timber supply resulting from implementation of the Conservation Strategy of Dr. Thomas.

Q5. The Jack Ward Thomas report mentioned that the recommended set-asides while specifically for spotted owls would also provide benefits to the region in terms of watershed protection, fisheries, and other values. Does your analysis include any effort to quantify what those benefits may be?

A5. This report was limited to economic effects from changes in timber supply resulting from implementation of the Conservation Strategy of Dr. Thomas.

Q6. In projecting potential job losses, did you first project likely job losses associated with the ongoing transition and increased automation of the timber industry, and subtract these from the total job losses you project?

A6. The job assumptions used in the analysis included the most recent employment figures based upon state-of-the-art technology. No attempt was made to speculate as to when any newer technology would be developed for operational use within the industry.

Q7. In light of this information is it fair to characterize your study as a worst case scenario that projects job losses absent any effort to control log exports, and other legislative and policy efforts that could increase timber supply or help local communities adjust? So one could look at your findings as not a picture of the future but a portrait of the challenge we face to make sure these projections do not occur.

A7. No, the report made export assumptions as indicated above with current employment figures based upon modern industrial capability with projected volume changes resulting from implementation of the Conservation Strategy of Dr. Thomas.

United States Department of the Interior

TAKE PRIDE IN AMERICA

NATIONAL PARK SERVICE
P.O. BOX 37127
WASHINGTON, D.C. 20013-7127

IN REPLY REFER TO:

L58(180)

1 9 JUN 1990

Honorable Dale Bumpers
Chairman, Subcommittee on Public Lands,
National Parks and Forests
Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Senator Bumpers:

Enclosed, in response to your letter of June 7 to Dr. Douglas Houston, are our answers to the questions on the Northern Spotted Owl report for inclusion in the May 23 hearing record.

Sincerely,

James M. Ridenour
for Director

Enclosure

QUESTIONS SUBMITTED BY SENATORS McCLURE AND WALLOP

Question 1. You stated in your testimony that while significant information gaps concerning spotted owl numbers and habitat exist for National Parks, some surveys have been done and more are under way or planned.

How many surveys have been done? What were the results of those surveys?

Answers: From 1985 to 1989, approximately 24 surveys were conducted in 7 National Park Service areas: North Cascades 2, Olympic 5, Mt. Rainier 5, Crater Lake 3, Oregon Caves 4, Muir Woods 4, Point Reyes 1. Large areas in the first four parks listed remain unsurveyed. Twenty-eight pairs of spotted owls were located on these surveys.

Question 2. How many surveys, in your best estimate, will be required until you have sufficient data to indicate long-term trends in habitats and owl populations throughout National Park System lands?

Answer: An inventory of owl habitat in the four parks in the Pacific Northwest Region will be completed during fiscal years 1992 through 1994. We estimate that habitat for the northern spotted owl could be inventoried in 1 year for NPS areas in California (Redwood, Point Reyes, Muir Woods). Owl habitat in NPS areas should be comparatively stable; long-term trends will occur only slowly as previously logged areas (about 40,500 acres) regrow into suitable habitat. Declines may occur periodically to the extent that natural fires are permitted to burn. Once owl inventories are completed, we suspect that determining long-term trends in owl numbers for NPS areas (or representative portions of individual parks) would require at least 10 years.

Question 3. On page two of your testimony, you draw a number of conclusions. Lacking sufficient scientific data, how do you arrive at these conclusions? Please provide supporting data.

Answer: Conclusions were derived as follows:

The Thomas Committee estimated that about 111 owl pairs now occur in proposed Habitat Conservation Areas (HCA's) in NPS areas, and that about 5 additional pairs are known from NPS areas outside HCA's. Therefore, owl populations for individual parks are small; Olympic may have habitat for 60 to 80 pairs; estimates for other parks range from 1 to 20 pairs. We concur with the general level of these preliminary estimates.

Owl habitat in the large mountain parks (North Cascades, Mt. Rainier, Olympic, Crater Lake) occurs as blocks at low elevations around the perimeters separated by unsuitable high elevation areas in the interiors. Thus, the already small numbers of owls in those parks may be further isolated into subgroups, with habitat connectively provided by lands outside. Owl habitat in the other NPS areas is small in area (Oregon Caves, Muir Woods, Point Reyes) or disjunct (Redwood).

Further, the mountain parks often contain habitat at the upper elevation limits of spotted owl's range, and North Cascades and Olympic approach the northern geographic limit of the species distribution.

Small populations are prone to extinction. Moreover, owl populations near the geographical and elevational limits of their range can be expected to fluctuate considerably in abundance over time, which increases chances of extinction. From this information, we inferred that the persistence of owls inside NPS areas depends heavily on the fate and success of owl populations outside, the main conclusion presented on page 2 of the testimony.

○